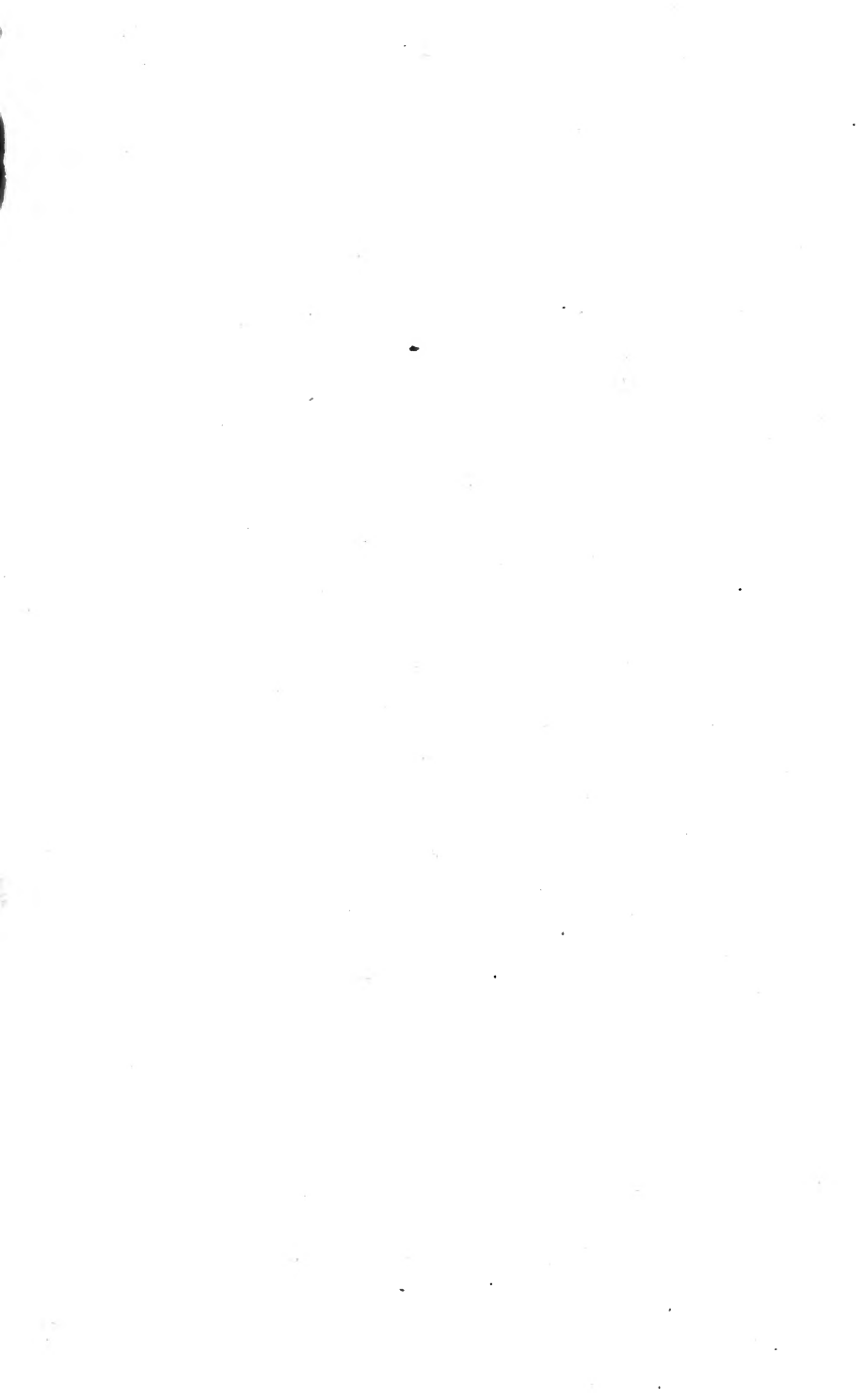


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THE ZOOLOGIST FOR 1851.

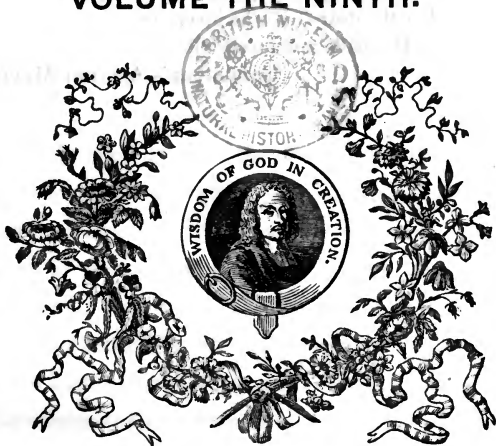
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THE
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A
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OF
NATURAL HISTORY.

CONDUCTED BY
EDWARD NEWMAN, F.L.S., Z.S., &c.

VOLUME THE NINTH.



LONDON:
JOHN VAN VOORST, PATERNOSTER ROW.

M.DCCC.LI.

“ He prayeth best, who loveth best,
All things both great and small ;
For the dear God who loveth us
He made and loveth all.”

COLERIDGE'S ANCIENT MARINER.

PREFACE.

“MANY waters cannot quench love ;” neither can the space which separates me from my readers in any degree diminish the cordial goodwill I feel for them. For months I look forward to this address as to a pleasant meeting with friends, for such I consider all who read the ‘Zoologist :’ and it is the prayer of my heart that nothing may ever interrupt the enjoyment I always experience when the meeting at last takes place ; when in imagination I grasp a thousand friendly hands ; when I see the smile of approbation illuminating a thousand friendly countenances. At such a moment I reap the reward of a twelvemonth’s labour, for labour assuredly it is, albeit a labour of love. An Editor’s task is not always an easy one : he has his trials : the inexorable *first* of every month arrives with a certainty and precision that throws railway punctuality into the shade : it takes no account of joy or of sorrow ; of sickness or of health ; of occupation or of leisure ; of abundance or of dearth as regards contributions : it demands the new number, and will take no refusal — will accept no excuse. Nay ! it is still more unreasonable, it will listen to no argument, however convincing : it is blind to circumstance ; deaf to reason. Then again, there is the invidious task of selection, the most distasteful of all an Editor’s duties : in the largeness of his love he would reject nothing, but there is a power that he must obey ; a very fastidious power too ; a censorial power that can inflict the punishment of fine ; that can enforce its criticisms by an argument addressed to the purse-strings : though he were overflowing with the cream of human kindness, an Editor must wince a little under the infliction of censure undeserved,

of punishment which he could not escape. Such are his trials ; but

“ Doth not a meeting like this make amends ”

for a host of them ? Am I not abundantly rewarded in the unwavering belief in your approbation ? And do not you individually feel a pleasure akin to my own in thus meeting him in whom you have for the year vested a stewardship over your literary labours ?

Let us take a hasty glance at the year about to close. Let us examine what progress we have made. The great event of the year, that which will distinguish it from all other years, is the gathering of nations in London to gaze on the industrial produce of the world. Not one of us can outlive the influence of that Exhibition. It will not merely become an era in the past of individual life ; but, in future ages, will stand out in bold relief as a land-mark of time ; and will evoke the heartfelt homage of generations yet unborn, as just tribute to the memory of that gracious Queen, and that wise and good Prince, who so cordially assisted in carrying out a scheme which had the ennobling of man for its glorious end and aim. Its influence upon our own science may perhaps be small, may perhaps disappoint the sanguine ; but it would scarcely be compatible with the pure catholicity of the design, that physical science, the history of unreasoning things, should compete with the triumphant achievements of reasoning man.

No portion of the Exhibition was set apart for specimens of Natural History, yet a number of such appear here and there, scattered among the produce of the different nations. In this way Canada, the United States, Australia, New Zealand, Europe, and Great Britain, have contributed ; and, with a few exceptions of insects and mammals, the contributions have been confined to the feathered tribes. In this department, Wurtemberg stands unrivalled. In this country the art of bird-stuffing has, in a limited number of hands, attained great excellence, and the modest aim of our greatest artists has been to represent repose : in this no one has surpassed Henry Doubleday ; there is a quiet truthfulness in his birds that defies criticism ; it consists not in mere smoothness of feather, but in a faithful version of the

figure : he preserves the exact contour ; like Bewick he is a student of Nature, and so has transferred to the inanimate skin, as Bewick to the inanimate wood, all the attributes of life that can exist without absolute vitality : and, moreover, he never fails to place a bird on its centre of gravity, a trait in which he stands almost alone. But the Wurtemberg stuffers have done more than this : they have given an appearance of intense life to their birds : a brood of owls is threatened by a stoat ; the old ones swell with truly parental rage, and the nestlings stare with as truly infantine wonderment : it is as though the whole group was fixed in a moment of motionless energy ; each individual is on the alert, but pausing, and it is just such a pause as might occur in nature : another owl spreads out his wings, ruffles his feathers, and turns his head completely over his shoulder, anticipating an attack from above : and a diversity of beings are, with a profound and philosophical knowledge of nature, represented in that momentary pause which must occur even in the midst of the most violent excitement. Again, the “ comical creatures,”—how wonderfully, with what truth, are these humanized copyists of humanity enacting their parts ! How would *Æsop* have luxuriated in such figures ! How easily would the imagination endow them with the gift of speech ! Mr. Hancock exhibited some excellent specimens of English stuffing : amongst these “ the bird-stuffers’ sign,” as it is called, the hawk, sealing-wax and quarry, was beautifully rendered ; but Mr. Hancock always makes a little too much of a bird’s neck ; not more, indeed less, than most professional bird-stuffers, all of whom exhibit a great weakness for this feature : this universal error arises perhaps from too much knowledge of the real structure ; even a sparrow’s neck, when under manipulation, is a serious affair, and the bird-stuffer is well acquainted with the real neck, no one better ; and he can’t imagine why it should be suppressed : my answer is, that Nature suppresses it. She runs the head and shoulders together in almost the whole of the Accipitrine and Passerine tribes. Leadbeater’s humming-birds and Bartlett’s Dodo (an historical fiction), must also be mentioned with unqualified praise.

Our Societies have shown great energy during the past year ; and the masterly Reports of the Meetings of the Zoological, Entomological, and Microscopical, have, I am sure, been read with pleasure and instruction. I take this opportunity of publicly expressing my thanks to the Secretaries of those learned bodies for the punctuality and courtesy with which their Reports are supplied. The Zoological Society, after falling almost into a state of inanition, has been resuscitated by the untiring and judicious exertions of the Secretary, Mr. Mitchell ; no expense has been spared to render the gardens attractive, and the result has been a prodigious increase in the number of visitors, and, as a consequence, of income also. The Exhibition, of course, brought multitudes of sight-seers to London and to the Gardens ; but the great increase commenced prior to their arrival, and the comparative increase still continues to be great. A most curious incident occurred at the Gardens in October ; one of the great snakes, having received his nocturnal allowance of rabbits for supper, is supposed to have made a snap at one of them, after the manner of his kind, and missing his rabbit, to have seized a mouthful of the large Welsh blanket, or railway wrapper, which he usually spreads over his knees and round his loins in chilly weather. He seems to have been as much pleased with a Welch rabbit for supper as some of his betters, for he left the live rabbits to gambol about his cage as they pleased, and confined his attention entirely to the inanimate substitute, which, after duly slavering over, he swallowed entire, notwithstanding the remonstrances of the head keeper, who was half petrified at the double loss, that of the blanket before his eyes, and that of the Boa as an almost infallible consequence. However, the next morning the Boa appeared none the worse for his unwonted supper ; a little bloated and lethargic, but nothing more : and as for the rabbits, the pretty little creatures were sitting up on their tails, and washing their faces with their paws with the most perfect *nonchalance* : the only effect produced in the reptile, beyond the *ordinary* one of repletion, was that of extraordinary thirst ; there was no end to his drinking : I presume the blanket required moisture to assist digestion. The blanket has since been

abstracted through the mouth, without the aid of a stomach-pump, and, I regret to add, the interesting patient remains in a very debilitated and critical state.

The present volume is enriched with a series of excellent papers on the Natural History of Norway, from the pen of the Rev. A. C. Smith: these abound with those vivid descriptions of Nature which so completely transport the reader to the scenes described, and excite a feeling akin to regret, in the reflection that such a harvest of facts as that country of mountain-wilds contains, should be so rarely reaped; that out of the crowds of sportsmen who migrate thitherward, so few should be able or willing to chronicle their observations. (Zool. 2977, 3023, 3041, 3083, 3103, 3130, 3167, 3187, 3256 and 3223).

Our South-American traveller, Mr. Bates, has sent but two communications; the first (Zool. 3142) is dated Ega, Upper Amazons, Dec. 23, 1850, and the second (Zool. 3230) is from Pará, under date of April 30, 1851. From these it will appear that Mr. Bates is pursuing Entomology with unabated energy and undiminished success; and that he omits all mention of any immediate return to his native land.

In birds, the most remarkable record is the discovery of a bird in the interior of Africa, evidently one of the Grallæ, but having a beak of anomalous figure and enormous magnitude. It is said to feed on young crocodiles, and our distinguished ornithologist, Mr. Gould, has given it the name of *Balæniceps rex*, (Zool. 3037). Four nominal additions have been made to our British birds. A well-authenticated instance of the occurrence of the hawk owl is published by Mr. Higgins, (Zool. 3029). The only claim the bird previously possessed to be inserted in our list as a straggler, was derived from an individual killed at sea, as recorded by Mr. Yarrell. Mr. Higgins's account is most circumstantial and satisfactory. Mr. Newton (Zool. 3277) records the occurrence of the American wax-wing or cedar-bird (*Bombycilla Carolinensis*) in Cambridgeshire: the specimen is in the

possession of Mr. Batson, of Horseheath, near Linton. Mr. Cordeaux (Zool. 3277) gives the following brief notice of the occurrence of the American mocking-bird (*Turdus polyglottus*) in Kent: "About the 19th of August, a fine specimen of this bird was killed on a farm near Ashford." And lastly, the Rev. A. Matthews states (Zool. 3300) that a bird which he supposes to be the yellow-backed Whidah finch, was lately exposed for sale at an Oxford poulterer's, having been shot in the month of September on Otmoor, in Oxfordshire.

In the wider field of Entomology, we have as usual a greater number of observations, and the record of rarities is too extensive to be repeated within the confined limits of a prefatory address: the novelties, however, claiming individual notice are, first, *Lepidoptera*. The Rev. Mr. Atkinson has taken a single specimen of *Gastropacha Ilicifolia*, upon heather, on Cannock Chase, in Staffordshire: the insect has been sent to London for identification, and the fact has been announced by Mr. Smith, at a meeting of the Entomological Society: since this, Mr. Stephens (Zool. 3244) has recorded the discovery, by Mr. Green, of two larvæ of the same insect near Sheffield. Mr. Barron (Zool. 3289) says that *Trochilium Chrysidiforme* has been found near Haslar, in Hampshire. Mr. S. Stevens records (Zool. 3291) the occurrence of *Eupithecia ultimaria* of Rambur, Boisduval, and Duponchel, at Dover, in the middle of September. Mr. Stainton, at a meeting of the Entomological Society (Zool. 3006), exhibited five new species of British Micro-Lepidoptera: these he identified as the *Coleophora partitella*, *C. Vulnerariæ* and *C. lithargyrinella* of Zeller, the *C. juncicolella* of Stainton and the *Elachista Treitschkeella* of Fischer-von-Röslerstamm: and at a subsequent meeting (Zool. 3232) the same indefatigable entomologist exhibited a specimen of *Lithocolletis Nicellii*, together with the larvæ and pupæ of the same insect, in leaves of hazel. Mr. Douglas also exhibited before the same Society a specimen of an apparently undescribed species of *Coleophora*, for which he proposed the name of *C. Inulæ* (Zool. 3239).

In British Aculeate Hymenoptera, four species are described as

new by Mr. F. Smith. *Chrysis ornatus* (App. cxxv.), *Ceratophorus anthracinus* and *Crabro interstinctus* (App. cxxvi.), and *Nomada mixtura* (App. cxxvii.); and the same talented Hymenopterologist has detected the *Bombus arcticus* of Dahlbom among some bees taken in August last, by Mr. Adam White, at Lerwick, in Shetland (Zool. 3268): and Mr. Stephens has found, in his own garden at Brixton, specimens of *Selandria sericea* of Hartig (Zool. 3163), previously unrecorded as British.

In British Coleoptera, seven additions have been made. *Aëpus Robinii* (Zool. 3090), taken by Mr. Wollaston on the Chesil Bank; *Trachoides hispidus* (Zool. 3102), by Mr. J. Walker, in the New Forest; *Acalyptus Carpini*, beaten off sallow-blossoms at Fenny Stratford, and *Mecinus collaris*, found at the roots and on the lower stems of *Plantago maritima* near Gravesend; both by Mr. S. Stevens (Zool. 3186); *Bembidium Schuppelii* of Dejean (Zool. 3289), found on the banks of the river Irthing, in Cumberland, by Mr. T. J. Bold; *Tachypus pallidipennis*, misnamed *Peryphus maritimus* (Zool. 3186), by Mr. John Scott; and *Dircæa discolor* (Zool. 3309), by Mr. S. Stevens.

In Radiata we have a single species, *Actinia clavata*, described by Mr. W. Thompson (App. cxxvii.); and a paper of great value and scientific interest has been read by Mr. Bowerbank, before the Microscopical Society, on the ciliary action of sponges, (Zool. 3008).

In exotic Lepidoptera the following species are described as new to science:—*Arctia Horsfieldii* and *Eudioptes Indica* (Zool. 3070) by Mr. W. Wilson Saunders; both of them natives of Java, and injurious to the cotton-plant: *Thaumantias Howqua*, from China, and *Drusilla Mylæcha* from the Indian Archipelago (Zool. 3096), by Mr. Westwood.

Many months have elapsed since a statement was made at one of the meetings of the Entomological Society, of a discovery made by Mr. J. C. Bowering at Hong Kong. This gentleman, who appears to have directed the energies of a very observant mind to the study of Entomology, detected on a specimen of the common Chinese *Fulgora*,

a parasite which he believed to be Lepidopterous: it seemed to possess the wing-nerves and legs of a *Bombyx*, and the antennæ of the male are described as beautifully pectinated, (Zool. 3269). The existence of a Lepidopterous parasite is extremely curious, and although we should exercise a degree of caution in giving full credit to the statement of a fact so perfectly anomalous, yet there seems no reasonable ground in this instance for supposing that a mistake could have occurred through incomplete or inaccurate observation; and I venture to express a hope that hereafter, when the characters of this insect shall have been more rigorously examined and defined, let its affinities be what they may, entomologists will kindly accede to the wish I have more than once expressed, of calling it *Fulgoræcia Bowringii*, thus making the name a lasting record both of its extraordinary economy and its talented discoverer.

In exotic Hymenoptera, Mr. Smith describes a new species of bee, under the name of *Lestis æratus* (Zool. 3151), but he does not mention the country whence he received it.

In exotic Coleoptera, the following Australian species of longicorns are described as new: — *Distichocera Kirbyi* (Zool. 3092) *D. MacLeayi* (Zool. 3092), and *D. par* (Zool. 3122), *Pempsamacra pygmæa* (App. cxxviii.), *Cerambyx pullus* (App. id.), *Omotes punctissima* (App. cxxix.), *Rhytiphora Donovanii* (id.), *Acanthocinus lineola* and *A. plumula* (App. cxxx.), *Isosceles pigra* (App. cxxxi.), *Pseudocephalus arietinus* (App. cxxxvii.), *Ametalla xanthura* (App. cxxxix.), *A. uber* (id.), and *A. decolor* (App. cxl.), and *Lamia dichotoma* (App. clxxix). *L. Helenor* (App. clxxx.), from the East Indies; also *Clerus socialis* (App. cxxxii.), one of the *Cléridæ*, and *Dohrnina miranda* (App. cxxxiii.), one of the *Ædemeridæ*, both Australian. These are in the cabinets of the Zoological Society, Mr. Westwood, Mr. Colquhoun, or consigned to Mr. S. Stevens, and all have been obligingly placed in my hands for examination and description.

In exotic Neuroptera a single species is described as new, *Nemoura speustica* (App. cxxxii.) from New Holland.

EDWARD NEWMAN.

Devonshire Street, Bishopsgate, November 29, 1851.

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ERRATA.

- Page 2983, for *Goshawk in Norfolk*, read *Gyr Falcon*, &c.
 „ 3186, for *Peryphus maritimus at Ardrossan*, read *Tachypus pallidipennis*, &c.
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ADVERTISEMENT.

'THE ZOOLOGIST' will be continued both as a monthly and an annual publication. As a monthly, it will contain thirty-two pages of letter-press, occasionally accompanied with illustrations engraved on wood; will be on sale two days before the end of every month; and will be charged one shilling. As an annual, it will be sold on or about the 1st of December; will contain twelve monthly numbers, bound and lettered uniformly with the present volume; and will be charged thirteen shillings. An alphabetical list, both of contributors and contents, will be published once in the year.

THE ZOOLOGIST.

FOR 1851.

Notes on Observations in Natural History during a Tour in Norway.
By the Rev. ALFRED CHARLES SMITH, M.A.

(Continued from page 2949).

THE Ptarmigan (*Lagopus vulgaris*). The bird which gave me the greatest sport in Norway, and which I most frequently sought for the sake of food, was the ptarmigan, called by the Norwegians "rype." There are two species of ptarmigan in Norway, *Lagopus alpinus* and *Lagopus subalpinus*; the former of these is somewhat smaller than the other species, and is the one which we have in Scotland. I have killed many of both species; and invariably found that while *L. alpinus* ranged over the bare and barren rocks, and vast tracts of snow on the highest fjeld, *L. subalpinus* always kept to the lower ground and the sides of the mountains; neither party encroaching on the territory of the other, but preserving inviolate the bounds assigned them by their specific names. In addition to its larger size, *L. subalpinus* in its winter plumage may be easily distinguished from its congener by the absence of the black feathers round the eye, and the lighter colour of its claws: speaking from my own experience, I do not think it so numerous as the other species. I have generally found the ptarmigan concealed among the gray lichen-covered rocks on the summits of the fjelds, and so closely do they resemble these rocks in colour, that I could scarcely ever see them on the ground; and sometimes when the more practised eye of my guide would find them, and he would point out the exact spot, it was not until after a long scrutiny that I could distinguish the bird within a dozen yards of me. Frequently we would find them on the snow itself, and many a time has a large circular depression in the snow been pointed out to me, where

the ptarmigan had been lying, and pluming himself in his chilly bed. He is a noble bird, free as air, and for the most part uninterrupted in his wide domain; he can range over the enormous tracts of fjeld, seldom roused by a human step, and still more seldom hunted by man. When the winter clothes his dwelling in a garb of snow, he, too, arrays himself in the purest and most beautiful white: when the summer sun melts away the snow, and the gray rocks appear, he, too, puts on his coloured dress, and assimilates himself once more to his beloved rocks. But the young ptarmigans are my especial favourites: I have caught them of all ages; some apparently just emerged from the egg, others, some weeks older: they are remarkably pretty little birds, with their short black beaks and their feathered toes; and so quickly do they run, and so nimble and active are they in escaping from you, that they are soon beneath some projecting stone, far beyond the reach of your arm, where you hear them chirping and calling out defiance and derision. The call of the old ptarmigan is singularly loud and hoarse; it is a prolonged, grating, harsh note, and may be heard at a great distance: indeed, it is quite startling to hear the call of a male bird amid the silence of the mighty fjeld. I shall never forget the occasion of my hearing and seeing the ptarmigan for the first time: it was at two o'clock in the morning, on one of the wildest fjelds. We had been endeavouring to find a way to the great Voririg Foss, across the mountains; and had travelled one day's march, partly on foot, partly on our clever Norwegian ponies; and with them had ascended perfect stairs of rocks, clambered over masses of loose stones, and plunged through bogs and patches of snow, and small lakes, when a violent snow-storm came on; and after pushing on as best we might for some time, our guide at length conducted us to a goat-shed, where we must pass the night: there was no door, and the roof was full of holes, and unfortunately the wind set right in at the doorway; however our Norsk guide soon collected some heather, and we made a blazing fire, round which our shivering horses as well as ourselves were glad to crouch, not heeding the suffocating smoke which filled their noses and throats, nor the bright flame which the crackling heather gave out. At first we tried to sleep; that was a very forlorn hope: although the 29th of June, the wind and snow made it intensely cold, and our time was completely occupied in heaping on fresh boughs of heather. As we were sitting over the fire in our hut, in the early morning, while the snow-storm was at its height, and the ground some inches deep in snow, a fine male ptarmigan came and perched on a rock within a stone's throw of our door: neither the

blazing crackling fire, which shone in the doorway of our hut, nor the dense smoke which arose from the holes in the roof, nor ourselves, as we moved about to heap on the fuel, had any effect in terrifying him : there he remained within a stone's throw of our hut for a quarter of an hour, as if on purpose to give me a good opportunity of watching his habits. He announced his arrival by a loud crow, which was very harsh, gruff and prolonged ; then he ran about on the snow, in the same manner as I have often seen a partridge do ; then he perched himself on a piece of rock which overtopped the rest, and turning his breast to the snow-storm, sat there for some time, as if enjoying the cold wind and sleet, which was drifting in his face ; just as one might have done on a sultry summer's day on the top of the Wiltshire downs, when a cool air was stirring there. Presently the hen bird arrived, and then he began to crow again. I soon lost sight of her, for she ran behind the rocks, and I saw her no more ; and soon after away went the cock, flying off down the wind in a sideling way, and with a whirring noise, and gave a parting crow as he went over the rocks and was lost to our view.

The Golden Plover (*Charadrius pluvialis*). In relating the foregoing anecdote of the ptarmigan, I have made mention of the great desolate fjeld on which I passed a stormy night : the only birds that I saw and heard during the two days and nights I was on that fjeld, were the ptarmigan and the golden plover : the latter were in great numbers, and so tame, that they would run along the stony ground within a few yards of me, then fly a few paces, then stand and stare and run along as before. It is very seldom that these pathless fjelds are trodden by the human foot ; and this accounts for the absence of timidity displayed by these birds. Our route was marked out (as it always is in such fjelds) by small stones being placed upright on some large conspicuous pieces of rock : these little pyramids of stone are excellent landmarks to show the way ; the snow does not obliterate or conceal them, and being readily formed, they are numerous enough to guide the traveller from one to another. It was while passing between two of these landmarks, that I discovered a nest of the golden plover, placed right in our path : the nest was a mere depression of the scanty grass, unprotected by bush, heather or rock : the eggs, four in number, and with the small ends toward the middle (as is usual with all the plover tribe) had been sat upon for some time : but I succeeded in bringing them away without damage, and they are now in my cabinet. I know nothing more monotonous and melancholy than the note of this bird, on a cold windy night, on the desolate uninha-

bited fjeld. It was incessantly repeated round our shed, and as the bird continued to bewail her hard fate (as it seemed to me), and the wind howled in unison, it became almost insupportable; and more than once did I rush out into the snow to throw a stone at the offender, and to drive from our hut the miserable bird, whose complaints were so mournful to the listener: and, indeed, I think the mythological poets proved themselves to be but sorry ornithologists, or they would certainly have changed Philomela into a plover rather than a nightingale; for the nightingale gives us sweet and delightful music, whilst nothing can be more mournful and plaintive, and express more abject woe and melancholy, than the cries of my companions on the wild fjeld, the golden plovers.

The Hazel Hen. This is the bird most highly prized by the epicure, if, indeed, there be such in Norway, which I am inclined to doubt, judging from the bill of fare one usually meets in that country. However, epicures or not, the Norwegians and Swedes do appreciate the dainty white delicate meat of the "*hjerpe*," which English sportsmen denominate the "*hazel hen*:" I must confess my ignorance as to its scientific name. I never shot but one, and that certainly was the most delicious, tender bird it was ever my good fortune to taste. I was driving through a thick forest, when two birds, feeding on the side of the road, and resembling pigeons, flew up among the trees: I quickly followed them with my gun. The trees and underwood were so dense that I could not see many yards before me, but at every step, the whirring noise of a bird rising from the ground within a very short distance, served to urge me on, with eyes wide open and my finger on the trigger. It was very evident that I had met with a covey or pack of some strange fowl; but before I could emerge into comparatively open space, where I could look around, some ten or twelve birds must have risen up: and now the last lingerer (as if waiting for my arrival) rose from the ground some distance off, and flew straight up to the extreme top of one of the highest larches: bang, and down he dropped. I knew him at once to be the Norwegian *hjerpe*: he is a very handsome bird, with beautifully marked plumage, and about the size of a red grouse. While I was loading again, I spied two more sitting on the top of a fir-tree: I soon crept under the tree, but the foliage was so thick, and the trees so numerous, that I could not catch sight of them. Again and again, I dodged about the tree and tried to get a view of them from underneath; and again and again I returned to my former post to assure myself they were not gone: no, there they sat, side by side, as motionless as the cones around them,

with their necks stretched out, as if listening. For full ten minutes I continued to advance, retreat, edge first this side, then that, but to no purpose: the intervening branches impeded my view: at length my patience was exhausted and I fired, but I only scared them away, and not another could I see, though I felt certain, the rest of the pack were in the tree-tops above.

Norwegian Jay (*Garrulus infaustus*). For want of a better name, I call this bird the "Norwegian jay;" he abounds in the forests of Norway, and with the single exception of the bird last described (the hazel hen), was the only land bird I saw in Norway which does not occasionally appear in great Britain. I was wandering in a large forest on the side of one of the mountains, which rises from the glorious Romsdal, and was searching for capercaillies, and meditating how I would thrust a bullet into my gun, in case we should stumble upon a bear (for they abound in these mountains, and during the five days we have been here, have killed two cows and severely wounded two others), when the note of a strange bird suddenly sounded in advance. "What bird can that be?" I exclaimed to my companion:

"Some kind of hawk;" he confidently replied. "Not a bit of it," said I, "no hawk ever had such a voice as that: it was more like the note of a fieldfare, or perhaps a jay." Now the notes of a hawk, a fieldfare and a jay, are not exactly alike certainly; and a very casual observer might distinguish between them; but this bird's note was an amalgamation of all three. We could not make it out by its note, so we advanced towards the place whence the sound came: there sat the owner of the voice, an ash-gray bird, with orange wings and tail: we knocked him down, and examined him at our leisure. He had a black head and beak, and black legs and feet, was just twelve inches in length, an elegant bird, and he could erect into a crest the black feathers on the top of his head. Most appropriate, indeed, was his name (*Garrulus infaustus*), though I did not know it, till I saw it in the museum at Trondhjem, for we should never have found him, had he not by his unlucky chattering apprized us that he was near. I afterwards met with many of these birds in the forest: they generally go in little bands of four or five. They are the most active birds, rarely stopping many moments on the same branch, but now hanging from the boughs with their heads downwards, now running and hopping from bough to bough, now perched on the ground, now arching their neck and erecting their crest, and spreading out their beautiful bright orange tails, they are remarkably elegant. Their flight is undulating and graceful, but very slow; and as the little band flies

àcross the road in the forest, it almost seems to be suspended in the air, or to be dancing in the sunshine, as I have seen fire-flies dance on the Pincian Hill at Rome on a warm spring evening.

Snowy Owl (*Surnia nyctea*). Once, and once only, I caught sight of this beautiful and very rare owl, as I was riding at 10 o'clock, P.M. through a thick wood : he came very near me, as he flew past, but so noiselessly, that I was not aware of his approach till I saw him stealing away. I was returning from a two days' shooting excursion on a ffield, my gun thrown over my shoulder, and I very tired and quite unprepared for a shot ; but at sight of the snowy owl, all my energies revived ; I soon jumped from my horse and went in pursuit. It was to no purpose ; I never saw him again.

ALFRED CHARLES SMITH.

Old Park, Devizes,
November 8, 1850.

(To be continued).

Birds of Oxfordshire. By the REV. A. MATTHEWS.

(Continued from page 2740).

SINCE the publication of our list of the ornithological productions of this county and its neighbourhood, two additional species have occurred, both belonging to the class of occasional visitors.

Masked Gull (*Larus capistratus*). An immature specimen of this bird was shot close to the town of Newbury several years ago, and is at the present time in the collection of the Bishop of Oxford.

Water Ouzel (*Cinclus aquaticus*). This species was observed on the bank of the river Cherwell, near Weston-on-the-Green, on the 6th of May, in the present year, 1850, by Mr. Willoughby Beauchamp.

During the last spring and summer months, the following have been the only Ornithological occurrences worthy of notice.

On the 13th of April a pair of Hoopoes were seen near Risborough, in Buckinghamshire ; one of them was killed, but the other effected its escape. When first seen they were in a ditch by the roadside ; the manner in which they were employed was not noticed.

A young specimen of the great northern diver was taken in the same neighbourhood on the 9th of May. This bird had dropped during the night in a deep ditch, and unable to extricate himself, lay

at the bottom loudly vociferating his harsh cry: the noise soon attracted the attention of a labourer, by whom, after a sharp struggle, he was captured, and carried to the gamekeeper of Lady Frankland Russell, of the Chequers Court. Here he lived for some time tethered by the leg to a stake on the margin of a fish-pond, to the great annoyance of its scaly inhabitants, until he was removed by her ladyship's orders to the garden of the Zoological Society. I regret to add that he died soon after his arrival in the Regent's Park.

A pair of the lesser tern (*Sterna minuta*), and also of the black tern (*Sterna nigra*), in the adult plumage, were killed on Port Meadow, near Oxford, in the beginning of May. And about the same time a specimen of the gray wagtail (*Motacilla boarula*) occurred in the full summer dress.

A. MATTHEWS.

Weston-on-the-Green,
November, 1850.

Occurrence of the Goshawk (Falco palumbarius) in Norfolk.—Whilst shooting at Frimlingham, on the coast of Norfolk, on the 17th ult., several gentlemen and myself, saw a gyrfalcon. He must have been an old bird, as he seemed to us to be almost of a snowy whiteness. This is the second that has been seen in that neighbourhood within the last three years; the other was killed at Beeston, on the 24th of February, 1848, and is now in the possession of Mr. J. Gurney Hoare of Hampstead. A few days after we had seen the gyrfalcon, two ospreys were seen at Frimlingham, one of which, a very fine bird of this year, was shot and is now in my possession.—*T. Fowell Buxton; Truman's Brewery, Brick Lane, November 19, 1850.*

Eggs of the Redwing.—There are inquiries on this subject in the 'Zoologist' for 1848 and 1850 (Zool. 2141 and 2948), the former of which I might have answered through its pages, had I not hoped that some one would have done so who had more conclusive evidence than I had to offer. I have in my own collection, eggs of the redwing from three or four distinct sources. Two of the earlier sets came from Scandinavia, and one is of the same lot as those figured by Mr. Hewitson, having been brought over by Mr. Dann. Others which I have, Mr. Procter has received from Iceland since his visit to that country. Besides these, I have from Iceland, eggs brought over three years ago by a much valued correspondent of the 'Zoologist,' and though, I believe, he did not take them himself, he had not the shadow of a doubt of their genuineness. All these eggs agreed, in being less than the ordinary eggs of the blackbird, but in other respects being just like them, and subject to similar variations. I have within the last few days, seen eggs from two nests of the redwing, taken by a friend of mine in Sweden, last June or July, and these too have a similar appearance to the rest. One of the nests was placed amongst the roots of an overthrown tree, and the other was in a low bush. I trust this weight of evidence, all from sources

worthy of the highest confidence, will be allowed to settle the question of the general character of the egg of the redwing.—*John Wolley ; Roxburgh Terrace, Edinburgh, November, 1850.*

On the true character of the Redwing's Eggs.—I am unable to furnish, in *propria personâ*, the evidence sought by your correspondents the Rev. S. C. Malan (Zool. 2141) and the Rev. A. C. Smith (Zool. 2948), to determine the character of the redwing's egg, never having been myself in a country where the bird breeds; but I can refer those gentlemen to a source from which they may obtain testimony of the quality they desire, and such as, I have little doubt, will satisfy them that the redwing's egg resembles the blackbird's, and not the egg of the song-thrush, notwithstanding the closer bodily resemblance of the latter bird. Some years ago, Mr. Yarrell made me a present of a couple of redwing's eggs (like blackbird's), which had been sent to him by Mr. Dann from Sweden, and when my friend Hewitson "took on with the new love" that he has adorned so splendidly, and, too mindful of the old adage, broke up his collection of eggs, he let me have other similar specimens, which came, I believe, from the same source. Knowing that Mr. Dann had the requisite skill and opportunity to insure correctness, and having the sanction of such authorities as my friends Yarrell and Hewitson, I placed these eggs in my cabinet in perfect confidence that they were correct; when, however, the prevalent doubt had been repeatedly broached, without provoking observation, and I saw that Mr. Yarrell allowed M. Nilsson's description of the redwing's egg to remain without comment in his second edition of the 'History of British Birds,' and I learnt from Mr. Hewitson that he had begun to waver, my confidence gave way. In this state of affairs I received, in August last, a packet of eggs from Mr. W. Proctor, curator of the Durham University Museum, containing amongst others, a redwing's egg, like a small blackbird's. Instigated by the doubt that had grown upon me as before stated, I returned the redwing's egg, and assigned my doubt of its correctness as my reason for doing so. This provoked a letter of expostulation from Mr. Proctor, written in a strain of honest indignation, and setting forth facts from which it was impossible to withhold conviction. He stated that he had shot redwings from their nests in Iceland and taken the eggs and young birds, and also addled eggs from nests containing young birds, adding the dates and places from his journal. He stated, moreover, that there is no other thrush in Iceland to render mistake possible. I knew that he had been in Iceland, but was not aware that he had identified the redwing's egg so clearly, or I should not, of course, have expressed to him the doubt I did. I can, however, hardly regret having done so, seeing that my doubt has been thereby dissipated. With his letter, Mr. Proctor sent me two redwing's nests and an additional number of eggs. The nests are built and lined with grass, without the admixture of dirt that prevails in the nests of our native *Merulidæ*. The eggs are not to be distinguished from small blackbird's eggs. Mr. Proctor must be known to many of your readers, and his likeness in his Iceland dress, forming the last vignette in Mr. Yarrell's 'British Birds,' must be well known to all. I feel assured that he would with pleasure answer the inquiries of those who may wish for additional particulars, or for testimony direct from himself, and it is probable that he may be able to supply specimens of redwing's eggs. I can add, for the further satisfaction of your correspondents, that both Mr. Yarrell and Mr. Hewitson have seen Mr. Proctor's letter, and are both satisfied that the redwing's egg resembles the blackbird's and fieldfare's, and not the egg of the song-thrush. Mr. Yarrell admits that the reprinting M. Nilsson's description, in the second edition of the 'British Birds,'

after he had received the eggs from Mr. Dann, was an oversight. He also tells me that the representations of the redwing's eggs in Dr. Thienemann's late work, resemble those of the missel-thrush, fieldfare and blackbird, and not those of the song-thrush.—*J. P. Wilmot ; Manchester, November 16, 1850.*

Occurrence of the Pied Flycatcher (*Muscicapa atricapilla*) *in Norfolk*.—A male of this species was shot at Lowestoft, on the 10th of May, 1849, by a gentleman residing at that town, and several others were killed in the neighbourhood of Lynn, during the same month.—*J. O. Harper ; Norwich, December 4, 1850.*

Blackcap Warbler in November.—This delightful bird usually leaves this neighbourhood in September ; indeed, it seldom stays beyond the first week in that month. This year, however, has presented us with a remarkable exception ; for on November 11th, a labourer brought to me a fine male, which had just been taken alive, under the following circumstances. He and another person were walking along a retired lane near here, when one of them perceived an unusual little bird, gliding leisurely about the branches of some willows in a holt. They at once determined to take him, and after considerable exertion ran him down. They described the bird as flying well, although when brought to me, one wing was somewhat damaged, probably in endeavouring to capture him. With the exception of the oak, the trees had lost their leaves ; the hedges also were bare, yet the bird had lingered with us more than ten weeks after his companions had departed, braving some cold weather and frosty nights, and still to all appearance was as healthy, and in as beautiful condition and plumage, as when summer fruits were abundant and the woods were green. He had evidently never been straitened for food, and I found from the dung which he dropped that he had been feeding on ripe blackberries. As soon as I received him, he was put into a cage and fed upon this fruit and worms, both of which he ate, and still looks lively. The confinement, however, is not quite so much to his taste as his native fields, for he is restless and uneasy, and continually flitting around his cage and trying to escape. My impression is, that had he not been caught, he would have braved the winter.—*John Joseph Briggs ; Melbourne, Derbyshire, November 17, 1850.*

Occurrence of the Shore Lark (*Alauda alpestris*) *near Yarmouth*.—A specimen of the shore lark was shot near Yarmouth about a week since, by a boy who was shooting small birds. It is a male specimen, in very good condition as to plumage, and it was also very plump in point of flesh. This is only the second instance (as far as I know) of the occurrence of this bird in the county of Norfolk.—*J. H. Gurney ; Easton, Norfolk, November 15, 1850.*

*Description of the Hairy Woodpecker, chiefly copied from Wilson's
'American Ornithology.'* By EDWARD NEWMAN.

It will be within the recollection of my readers that some correspondence appeared in the volume for 1849, on the occurrence in Yorkshire of a woodpecker, new to Britain : the first notice is in the July number of that year (Zool. 2496), where Mr. Higgins minutely describes the specimen which was shot at Whitby, and which reached

his hands in a very recent state, the body being removed, but the flesh still adhering to the wing-bones, leg-bones and head. In a subsequent communication, Mr. Bird identifies the specimen as an individual of the hairy woodpecker (*Picus villosus*, Zool. 2528), and recites the authors by whom it had previously been noticed as British. I have the pleasure of laying before my readers a hastily drawn but characteristic sketch of the bird, obligingly furnished by Mr. Higgins, and of quoting from Wilson's 'American Ornithology' a more detached description.



Hairy Woodpecker (*Picus villosus*, Linn.).

“This is another of our resident birds, and, like the yellow-bellied woodpecker, a hunter of orchards and borer of apple trees, an eager hunter of insects, their eggs and larvæ in old stumps and old rails, in rotten branches and crevices of the bark ; having all the characters of the woodpecker strongly marked. In the month of May he retires with his mate to the woods, and either seeks out a branch already hollow, or cuts out an opening for himself. In the former case I have known his nest more than five feet distant from the mouth of the hole ; and in the latter he digs first horizontally, if in the body of the tree, six or eight

inches, and then downward, obtusely, for twice that distance ; carrying up the chips with his bill, and scraping them out with his feet. They also not unfrequently choose the orchard for breeding in, and even an old stake of the fence, which they excavate for this purpose. The female lays five white eggs, and hatches in June. This species is more numerous than the yellow-bellied woodpecker (*Picus varius*) in Pennsylvania, and more domestic ; frequently approaching the farmhouse and skirts of the town. In Philadelphia I have many times observed them examining old ragged trunks of the willow and poplar while people were passing immediately below. Their cry is strong, shrill and tremulous ; they have also a single note or chuck, which they often repeat, in an eager manner, as they hop about, and dig into the crevices of the tree. They inhabit the continent from Hudson's Bay to Carolina and Georgia.

“The hairy woodpecker is nine inches long, and fifteen in extent ; crown, black ; line over and under the eye, white ; the eye is placed in a black line, that widens as it descends to the back ; hind head scarlet, sometimes intermixed with black ; nostrils hid under remarkably thick, bushy, recumbent hairs or bristles ; under the bill are certain long hairs thrown forward and upward ; bill, a bluish horn-colour, grooved, wedged at the end, straight, and about an inch and a quarter long ; touches of black, proceeding from the lower mandible, end in a broad black strip that joins the black on the shoulder ; back black, divided by a broad lateral strip of white, the feathers composing which are loose and unwebbed, resembling hairs, whence its name ; rump and shoulders of the wing, black ; wings, black, tipped and spotted with white, three rows of spots being visible on the secondaries, and five on the primaries ; greater wing-coverts also spotted with white ; tail, as in the others, cuneiform, consisting of ten strong-shafted and pointed feathers, the four middle ones black, the next partially white, the two exterior ones white, tinged at the tip with a brownish burnt colour ; tail-coverts, black ; whole lower side, pure white ; legs, feet, and claws, light blue, the latter remarkably large and strong ; inside of the mouth, flesh-coloured ; tongue, pointed, beset with barbs, and capable of being protruded more than an inch and a half ; the os hyoides, in this species, passes on each side of the neck, ascends the skull, passes down towards the nostril, and is wound round the bone of the right eye, which projects considerably more than the left for its accommodation. The great mass of hairs that cover the nostril, appears to be designed as a protection to the front of the head, when the bird is engaged in digging holes into the wood.

The membrane which encloses the brain in this, as in all the other species of woodpeckers, is also of extraordinary strength, no doubt to prevent any bad effects from violent concussion while the bird is employed in digging for food. The female wants the red on the hind head; and the white below is tinged with brownish. The manner of flight of these birds has been already described under a former species, as consisting of alternate risings and sinkings. The hairy woodpeckers generally utter a loud tremulous scream as they set off, and when they alight. They are hard to kill; and, like the red-headed woodpecker, hang by the claws, even of a single foot, as long as a spark of life remains, before they drop.

"This species is common at Hudson's Bay; and has lately been found in England. Dr. Latham examined a pair which were shot near Halifax, in Yorkshire; and on comparing the male with one brought from North America, could perceive no difference, but in a slight interruption of the red that marked the hind head of the former; a circumstance which I have frequently observed in our own. The two females corresponded exactly."—p. 159, vol. i.

E. NEWMAN.

Death of Martins and Swallows.—A great number of martins and swallows were found dead or dying in the barns, sheds, churchyards, &c., of this county, on the 10th and 11th of May, 1849, the weather being cold and boisterous. No doubt they perished either from the direct effects of the cold, or from the destruction of the insects on which they generally feed.—*J. O. Harper; Norwich, December 4, 1850.*

Occurrence of the Hoopoe (Upupa Epops) in Norfolk—Two specimens of this rare bird were killed on the 22nd of May, 1849, at Yarmouth, and are now in the possession of a gentleman residing at Lowestoft: on the 11th of April, 1850, a male was shot in a sandpit near the church at Lowestoft, and was purchased and preserved by a gentleman of that town; and on the 13th of the same month, another specimen was shot at Yarmouth, by a gentleman of that town, and purchased by Mr. Knights.—*Id.*

Note on the Capercaillie (Tetrao Urogallus).—In reference to the interesting particulars given by the Rev. Alfred C. Smith (Zool. 2944) of the capercaillie* or wood grouse, I may mention that, more than twenty years ago, a specimen of this noble and eagle-looking bird was sent from Norway to a gentleman living in Banff, in the same house with myself. It had been killed about the time that the vessel sailed; and, the

* Although this name is frequently spelled capercailzie, I have never heard it pronounced in Scotland in any other way than capercaillie. It is said to be Gaelic for 'stag of the wood.'

passage being a quick one, it was quite fresh and in the finest condition. It was the most beautiful example of the bird which I have ever seen, and weighed upwards of fourteen pounds. It being determined upon that it should be eaten, it was put into the hands of the cook, and desirous to ascertain upon what it had been feeding, I was present when its stomach was opened. This was found to be crammed with the slender leaves, or, as they are sometimes called, the needles of the Scotch fir (*Pinus sylvestris*). These were indigested and entire; and were so numerous as to fill a common table plate. The flesh had a perceptible flavour of fir, and was, moreover, as your correspondent remarks, of a somewhat dry character, and rather coarse in the fibre. The bird was received, so far as I can recollect, in the month of May; and I have no doubt, that as the summer advances and gives birth to other kinds of food, that furnished by the fir is for the time abandoned. Lord Fife had several of these magnificent birds, both male and female, for some years, in an aviary amid the plantations around Duffhouse. The aviary was retired and spacious, and was planted here and there with small pine trees, to assimilate the scene in some measure to that of their natural abode. They bred freely; but the young ones, after reaching a certain stage, were uniformly cut off by internal disease, produced by a species of worm in their intestines. The eggs were very uniform in appearance, being exactly like that figured by Mr. Hewitson, in his work on the subject. They are remarkably fine eating. In 1829, I saw nine eggs of the capercaillie, which were sent over from Norway to his lordship, to be hatched at Marr Lodge in Braemar. They were completely different in appearance from any others of this interesting bird, which have come under my notice. They were without any spots, and of a deep brown colour, with some scarcely perceptible yellowish blotches. In the account given by Naumann and Buhle of the egg of this bird, it is said, "in warm water all the dots may be washed off, and then appears the surface, a uniform very pale rust-yellow." (*Eier der Vögel Deutschlands*, Taf. iii. 1). Perhaps the eggs to which I allude, had been treated in some such manner. It was found impossible to hatch them. At certain seasons, the male capercaillie casts the skin which envelops his powerful looking bill. It comes off as if it were a sheath, and is soon replaced by a new covering. This was pointed out to me by an intelligent gamekeeper, who studied the habits of the birds, and I have myself seen the operation going on. The circumstance, so far as I am aware, is unnoticed in books.—*James Smith; Manse of Monquhitter, Aberdeenshire, November 20, 1850.*

Occurrence of the Avocet (Recurvirostra Avocetta) at Sandwich, in Kent.—A specimen of the avocet was shot at Sandwich, by a gentleman formerly of Lowestoft, on the 22nd of April, 1849.—*J. O. Harper; Norwich, December 4, 1850.*

Occurrence of the Little Bittern (Ardea minuta) in Norfolk.—A beautiful male specimen of this bird was shot at South Waltham on the 11th of June, 1849, and was preserved by Mr. Knights, of this city.—*Id.*

Woodcock Breeding in Sussex.—I have recently received authentic intelligence, that during the summer of the present year, a brood of four young woodcocks was seen at Brede, in the eastern part of Sussex. The spot was a wood, at a short distance only from a house; they were only partially fledged, but able to flutter a little, and they were discovered in consequence of one of the parents pretending to be crippled, the trick so commonly practised, under the same circumstances, by partridges and various other birds. It is satisfactory to know that no further molestation was offered to any of the family beyond taking one of the chickens into the hand for examination,

but none of them were noticed afterwards. Though similar occurrences may not be often heard of, I conceive they may be really less rare than would be supposed. In some large woods in the parish of Goudhurst, Kent, woodcocks bred not unfrequently, I believe, twenty years ago; since which period, all information respecting the estate has ceased to reach me: and the numerous remains, occasionally extending continuously over hundreds of acres, of the ancient forest of Anderida, in various parts of the Weald of both Kent and Sussex, present many localities so favourable to the habits of these birds, that it seems not improbable some may tarry, and raise their young there. That this may happen, and yet escape observation, is not a matter to excite much surprise. The woodcock seldom, if ever, moves by day voluntarily, and although it may proceed to its feeding-ground before the light has departed during the long evenings of summer, at that season of the year far less attention is generally paid to the birds which may fly past, than would be the case at other times, beside the additional concealment then derived from abundance of vegetation. In corroboration of the above conjectural reasoning, very recent information enables me to add some further facts. There is an estate in the north-western angle of Sussex, comprising a large proportion of woodland, whither, for at least twenty years past, three or four couples of woodcocks have usually, if not invariably, resorted, for the purpose of nidification; and so constantly is this known to happen, that the owner of the property would undertake to exhibit one or more of the birds upon his table on any assigned day in the year; and annually, for two days during the summer, on some special occasion, it is his regular practice to produce a dish of woodcocks. Another circumstance I have to state is, that the friend, from whom the preceding particulars were obtained, was himself taken with others, at no very distant period, to see a woodcock's nest, containing eggs, in the neighbourhood of Godalming, in Surrey.—*Arthur Hussey; Rottingdean, November 19, 1850.*

Carnivorous propensity of the Water Rail (Rallus aquaticus).—In preparing one of these birds for preservation, I found in the gizzard a full-grown specimen of the common shrew (*Sorex araneus*); I believe this to be an uncommon occurrence.—*J. O. Harper; Norwich, December 4, 1850.*

On the Swimming of Water Fowl.—I believe I am correct in saying that the difference in the ordinary mode of swimming of web-footed birds, and those which are neither webbed nor lobe-footed, has not been noticed, or if noticed, has not been laid down by naturalists. I think, from observation, that it would be true to assert that the Natatores, properly so called, in their ordinary mode of direct progression, invariably row, that is, they strike with both feet at the same time; whilst other birds which occasionally take the water, as many of the Grallatores, paddle, or use their feet alternately, and that generally in very rapid succession. I have frequently observed this in the common water-hen. The reason for this difference is obvious, for we have only to observe a swan or duck in the act of turning, to see how great an effect is produced upon the motion of the bird by a one-sided stroke. Were the Natatores to use such powerful instruments as their webbed-feet alternately, the motion, especially of the larger kinds, would be from side to side, and they would exhibit on the water, as clumsy a performance as they do on shore, and would remind us of a set of landlubbers pulling for the first time down to Eel-pie Island, instead of being more perfect and regular in their action than the crew of a man-of-war's gig.—*Francis K. Amherst; St. Mary's, Oscott, December 6th, 1850.*

Occurrence of the Fork-tailed Petrel (Thalassidroma Leachii) at Lowestoft.—When

out shooting on the beach between Lowestoft and Yarmouth, on the 28th of November, 1849, I saw three specimens of this rare bird, and fired at them, but was at too great a distance to obtain either. I was, however, enabled to observe them for some time with a telescope. A day or two after, a specimen was shot at Yarmouth, and was purchased and preserved by Mr. Knights, of this city.—*J. O. Harper; Norwich, December 4, 1850.*

Insensibility of Fish to pain.—Whilst fishing a short time since off Swyre, I hooked a good sized fish, but before I was able to get it into the boat it broke away, taking my hook and about two fathoms of my line. Within two or three minutes I had another bite, and this time succeeded in hauling in a very large bream (*Cyprinus brama*), and strange to say, there was my own hook with the line hanging out of its mouth: on being opened it was found full of bait, and, therefore, must have taken the hook the second time from wantonness, which I think it certainly would not have done had it been suffering any pain. I have frequently caught fish with as many as three or four hooks in them, but never one before with one of my own in it. Bream afford capital sport when once they get round the boat; but they are not now considered so great a luxury as, according to Sir W. Dugdale, they appear to have been in Henry the Fifth's time, when they were valued at one shilling and eightpence. The French, even now, prize them more highly than we do, and to this end have the proverb "He that hath breams in his pond is able to bid his friend welcome."—*R. Roe; Leigh, near Sherborne, November 12, 1850.*

Aquatic Rencontre.—One day last week, in the beautiful sheet of water, Hatterton Lake, a novel rencontre was witnessed. A goose, whilst its beak was under water, was seized by a pike and a struggle for life ensued; the poor goose was seen to go under water several times and come back, only the body being visible, its head not rising above the surface, till at last it sunk altogether, a prey no doubt to its ravenous assailant.—*Staffordshire Advertiser, November 12, 1850.*

Occurrence of a Shark (Squalus carcharias) at Portland.—On Wednesday, 23rd of September, a shark, measuring nine feet, and weighing 500 lbs., was caught in a mackerel-net by some fishermen, on the Chisel beach. About six weeks previously, I saw one evidently in pursuit of some fish: it was so near the shore as to enable me to see with certainty what it was. Probably the monster of the deep continued in the neighbourhood, feeding on the herrings which usually strike in about this time. Several strangers have this year visited our coast, drawn out of their latitude by the warmth of the weather.—*R. Roe; Leigh, near Sherborne, November 12, 1850.*

Occurrence of the Sturgeon in Rivers.—A sturgeon, between five and six feet in length, was caught in a salmon-net in the Clyde, below Renfrew, on the 15th of April, 1849: another, six feet long and weighing 38 lbs., was caught in the Nene, about five miles from Lynn: a third, measuring upwards of five feet in length and weighing nearly four stone, was caught in the river Northwold, near Stoke Ferry. It is rather singular that so large a fish should be found so far from the sea.—*J. O. Harper; Norwich, December 4, 1850.*

Capture of a Species of Atherine (Atherina Boyeri), new to the British Fauna. By JONATHAN COUCH, Esq., F.L.S., &c.*

It is only of late that more than one species of atherine has been recognized by naturalists ; and even in the last edition of Mr. Yarrell's 'British Fishes,' no other besides the *Atherina Presbyter*, popularly known in the west of England as the common smelt, is recorded as a British species. It is with much pleasure, therefore, that I am able to communicate to the Society the fact of the occurrence of another species, the *A. Boyeri*, Boyer's atherine of Risso and Cuvier, on our coast ; and as the circumstances attending its discovery appear to me to be illustrative of its distinguishing habits, I will be the more particular in describing the manner in which this fish fell under my observation.

In the middle of October, 1846, when the weather was turbulent and the sea much disturbed, a multitude of little fishes made their appearance in our harbour, and when the water became smooth they were seen to be loosely scattered in all directions, but not more than two or three being close to each other, none of them far below the surface, and all busily engaged in touching or taking minute objects swimming at the surface ; so that it appeared as if there was perpetually falling a thinly scattered succession of drops of rain. As these fishes continued with us for more than a week, I had several opportunities of watching their actions ; and I observed that they often associated into small loosely arranged companies ; but the whole multitude commonly proceeded in one direction, examining every small attractive object on the surface, that had a little motion, and dimpling the surface in doing it. But when I proceeded to endeavour to obtain a few specimens for examination, I soon discovered, that however earnestly intent they appeared to be on the objects of their pursuit, they were not less attentive to their own safety. With a hook I had little success, as, from their small size, none but those which are used in fly-fishing could be taken into their mouths ; but they showed much indifference to a bait, and only followed it when by a little motion it was made to assume the appearance of being alive. I was made more sensible of their vigilance when I attempted to catch a few with a hand-net from the rock ; for they always kept at a distance

* This paper was read at a meeting of the Natural-History Society of Penzance.

from the place where I fixed myself, and by so doing, rendered it exceedingly difficult to secure a single one. I succeeded at last by concealing myself behind a projecting ledge, and making a sudden dip with the net in a direction opposed to their course.

These fishes were all of one size, about three inches long, and much resembling the common atherine; but they are distinguished by a proportionably larger eye, and a somewhat different arrangement of the fins. They are well described and figured in the 'History of Fishes,' by Cuvier and Valenciennes; for access to which, I am indebted to my friend Mr. Yarrell, to whom I had the pleasure of presenting the specimens I obtained. It appears that this fish is not uncommon in the Mediterranean; but although I have watched for them attentively for three subsequent years, I have not seen them since the date above given.

JONATHAN COUCH.

Polperro, December, 1850.

Remarks on a Fossil Fish of the Old Red Sandstone of Gamrie.

By the REV. JAMES SMITH.

I HAVE often felt amazement, and even awe, from the fact that thousands of years before the creation of man, the Almighty had already prepared a succession of volumes, so to speak, from which, at a certain stage in the progressive advances of his race, man might be enabled to ascertain what had been the proceedings of his Maker, and what kinds and varieties of animals had from time to time been formed by him, on this our planet, during the unnumbered succession of ages through which, we can now see, it must have passed before it became the abode of rational and accountable beings. These volumes were carefully laid up in the most secure and befitting recesses. Their leaves were of stone; and the illustrations which they contained, were of the most finished and beautiful description. Unlike what takes place in the delineations of a human pencil, the animals themselves drew individually the outline, and furnished the tints, by which their portrait was to be produced in the most enduring and characteristic manner. These portraits were intended to form a subject of study to man; but it is remarkable, that they were nevertheless to remain unknown to him till after he had been no fewer than six thousand years in the world. During that lengthened period, not one of his race was

to have even a suspicion of their existence. But the time at length came when it was the pleasure of the Creator, that access should be had to these most extraordinary and most interesting records; that they should be brought to light from the gloom in which they had lain so long; that they should communicate decisive although most unexpected intelligence of what had been going on in our planet from the morning of its existence; and that they should furnish a new theme for admiration of him, by whom, in the language of Scripture, all things were made very good. And the feature, perhaps, which in a scientific view distinguishes most greatly the now expiring half of the present century, is the progress which has been made by man in that portion of the history of the world, which has reference to a period previous to his own creation.

Among the wonderful volumes, of which we are speaking, may be regarded as one of the most ancient that which is termed the "old red sand-stone formation." In this great formation there are three principal beds, or divisions, each of which is characterized by one or more fossils peculiar to itself, along with some which it may have in common with the other beds, and with other formations. To the formation of which we are speaking, the attention of the scientific and even of the literary world, such are the popular graces of his style, has been largely directed by Mr. Hugh Miller, so justly celebrated for his extent of geological knowledge, his acuteness of observation, and his uncommon, most graphical, and even poetical powers of description. It is, in an especial manner, to the productions of the lowest of the three beds now mentioned, that his researches have been detected. Of this bed, the characteristic fossils are, as is well known, *ichthyolites* (*fish-stones*), or petrified fishes, of a very unusual and peculiar form; and the localities where they have been found are three, *viz.*, Caithness, Cromarty, and the parish of Gamrie in Banffshire. On the farm of Findon, and in the parish just named, a locality of this description has been famous for more than twenty years; and the fossils which have, principally speaking, been obtained from it, are specimens of various species of the *Coccosteus* or berry-bone, and of the *Pterichthys* or wing-fish. This locality has been visited by not a few of the eminent geologists of our own day; and, till of late, it was the only one which was known in the parish. Some time ago, however, the Rev. George Harris was appointed assistant to Mr. Wilson, the minister of Gamrie; and being one of the few individuals, at least in this part of the country, who would appear to take pleasure in making themselves acquainted with the animated beings

which the sovereign Creator has brought into existence in such wonderful number and variety, he had his attention early directed, in consequence, to those fossil specimens at Findon, for which Gamrie has so long been not a little remarkable. And thinking it not improbable that, in the neighbourhood, there might be localities of a similar character which were yet unexplored, he instituted researches for the purpose; and the consequence has been that he has succeeded in meeting with fossil remains in some deep ravines traversed by water, and lying at a short distance to the south of the Manse. Among these fossils, in conjunction with specimens of *Pterichthys* (figured Zool. 47), *Coccosteus* (figured Zool. 48), &c., he has found others, which, to him at least, are unknown; and there is one in particular which is of a singular configuration, and of which, through his kindness, I am now enabled to transmit you a drawing from the pencil of Mrs. Wilson, Manse of Gamrie. Of this specimen, he has not met with any individual that takes an interest in fossil researches, who has either seen or heard of an example. An examination, moreover, of Mr. Miller's publication '*The Old Red Sandstone*,' has strengthened him in the opinion that the ichthyolite, of which we are speaking, may, perhaps, be still undescribed and unfigured. Such an opinion, however, he wishes it to be distinctly understood, is merely that of himself, and of those to whom he has submitted his specimens; and he is prepared to find that the ichthyolite, to which I am referring, has already been noticed, and, it may be, is even familiar to such as are properly acquainted with the present state of palæontological discovery.

JAMES SMITH.

Manse of Monquhitter by Turriff, Aberdeenshire,
December 14, 1849.

P.S.—Since the above was written, I was informed, both by a notice on the wrapper of the '*Zoologist*' for February, 1850, and also by a private communication from the Editor, that the ichthyolite referred to, is the *Diplacanthus longispinis* of Agassiz's work, on the '*Fossil Fishes of the Old Red Sandstone*.' Having had an opportunity, the other day, of examining, for the first time, a copy of the splendid publication now mentioned, belonging to the noble library of King's College, Aberdeen, I paid particular attention to the representation of the ichthyolite of which I am speaking; and, so far as I am capable of seeing and judging, it differs materially from the specimens of the

fossil which are in the possession of Mr. Harris, and to which reference is made in the foregoing communication. The head would appear not to have been present in the specimen figured by M. Agassiz. This part is, however, apparently complete in several of the specimens obtained from the new locality discovered at Gamrie. The tail, moreover, is altogether different; at least it appears so to others as well as to myself, although we would be understood as making no pretensions to knowledge or to experience in palæontological researches. But it would, perhaps, be desirable that these differences, or, as may very probably turn out, these supposed differences, should be examined by competent authority, and not through the medium of a drawing, but from the original fossils themselves. For such a purpose, I have no doubt that, should you wish it, these originals would be readily transmitted for your inspection. One of the specimens is much smaller than the others; but, except in size, the identity would seem to be exact between it and those which are larger. In other respects, such as the sail-like fins on the back, and the character of the scales, &c., the specimens agree exactly with the beautiful and highly finished representation of the *Diplacanthus longispinis* as given by M. Agassiz.

Mr. Harris has in his possession a large fossil specimen, discovered in the same locality, in which the scales are of great size, and are most beautifully and distinctly marked. In the plates alluded to, none of the scales delineated are, to all appearance, of exactly the same character as these now mentioned.

JAMES SMITH.

November 16, 1850.

Notes of the Marine Zoology of Moray Firth. By the REV. GEORGE HARRIS.

(IN the Preface to the 'Zoologist' for 1848, you regret (p. xvii) the comparative paucity of communications on Fishes, Crustacea, Radiata and Zoophytes; and you invite the attention to these branches of Natural Science of all such individuals, competent for the purpose, as are resident on the coast; and as, in consequence, have frequent opportunities of examining those multitudinous productions, which are given up by the mighty deep, but which, when they do not happen to contribute to the food of man, are allowed, almost in every instance,

to go to decay upon the beach, unexamined and even unnoticed, however rare in themselves, and however wonderful in their structure or brilliant in their colour. On this account I feel persuaded that the following communication from the Rev. George Harris, of whom mention has already been made in the 'Zoologist' will be deemed of interest and of value, both by yourself, and by those of your readers, to whom the above-mentioned divisions of the animal kingdom afford a particular and a favourite study. I embrace the present opportunity of correcting an error in regard to the *Ophiocoma parmularia* (Zool. 2936). The depth of water at which it was obtained should have been fifteen fathoms and not five.—*James Smith; Manse of Monquitter*).

I beg to transmit the following notices of the more rare fishes, which have been taken, within the last eighteen months, in the Moray Firth, off the fishing stations of Pennan, Aberdeenshire, and Gardenston, Banffshire.

The first, which I shall mention, is the *Motella vulgaris*, the three-bearded rockling, or whistle fish. This fish was brought to me in the beginning of the summer of 1849, and the specimen measured twenty and a half inches in length. As neither Mr. Yarrell in his 'British Fishes,' nor Dr. Parnell in his 'Fishes of the Firth of Forth,' takes notice of any specimen as above sixteen inches long, the size now mentioned, may, perhaps, be admitted as rather unusual. Both of these gentlemen agree in describing the colour of the head, back and sides as yellowish brown, with chestnut-brown or dusky spots; the pectoral, dorsal and caudal fins as a rich chestnut-brown; and the ventral and anal fins as a pale yellow-brown. In the specimen in my possession, when fresh from the sea, the colour of the upper portion of the body was reddish brown; that of the lower, or ventral, yellowish brown; while the spots were of a dusky purplish hue. The fins were all of a reddish brown, with the exception of the ventral, which is brownish yellow. There is considerable disparity in the numbers of the fin-rays of this species of fish as given by naturalists. According to Yarrell, they are

2nd. D. 55—P. 20—V. 7—A. 49—C. 18.

In the specimen described by Parnell, they are

1st. D. 76.—2nd. D. 57—P. 23—V. 7—A. 50—C. 20.

In the specimen examined by myself, they are

1st. D. 80.—2nd. D. 60—P. 20—V. 7—A. 50—C. 30.

These rays are also different, with the exception of the ventral, as

they are enumerated by Jenyns in his 'Manual of British Vertebrate Animals,' p. 450. And from all this it would appear, that the number of fin-rays is uniform in the ventrals only; the closest approximation to correspondence in the others being in those of the pectorals and anals. Dr. Parnell remarks of this fish, that it is by no means of common occurrence towards the north; and that it is rare in the Firth of Forth, as well as along the whole of the eastern shores of Scotland (Id. p. 355). The fishermen here tell me, however, that they meet with it frequently. The denture,* which in my specimen is very perfect, does not appear to be particularly described in either of the works of Yarrell and Parnell. Both jaws are furnished with a double row of teeth. There is first a broad flat row of minute, thickly-set, pointed teeth; and along the side of these, a row of irregular-pointed ones, of larger dimensions. But, on the upper jaw, this second row is external to the flat seam, while, on the lower jaw, it is on the inside of it. When the jaws are compressed, there is thus formed a natural box, as it were, for confining the food which is to be crushed; and there is, also, an angular patch of teeth fixed to the bone of the palate, which correspond in structure to the flat broad rows in the jaws. Such an apparatus is obviously adapted for tearing as well as crushing; and there can be no doubt that it is indispensably necessary for those feeding instincts, with which the animal has been endowed.

My next specimen is the *Motella quinquecirrata*, or five-bearded rockling, which was captured in April of this present year. I am indebted for this, as well as for several others of the rarer productions of the deep, to the kindness of Mr. William West, of Pennan, a most intelligent and obliging individual. The specimen in question is about seven inches in length, and corresponds so closely with the descriptions of Yarrell and Parnell as to leave no room for particular remarks. There is, however, a slight variation in the number of rays in the second dorsal; and the dingy skin had more of a metallic appearance than would seem to have been shown in the specimens under their consideration.

The species, which I shall next notice, derived also from Mr. West, was caught in May last, off Troup Head, in eighteen fathom water, and is a beautiful example of the *Callionymus Dracunculus*, or sordid

* Is this a strictly accurate expression for the idea intended? By some it is maintained that *dentition*, the word more commonly used, means merely the cutting or breeding of the teeth; and that the word *denture* ought always to be employed in referring to these when they are fully grown, and are permanently fixed and formed.

dragonet. It is about the same length as that described by Yarrell, and it corresponds in every respect with the statements of my two authorities so often mentioned (Yarrell and Parnell), save that Yarrell takes no notice of the protractile snout, which, in the specimen of which I am speaking, was capable of an elongation of two-eighths of an inch. As it has been suggested that this species may possibly be only the female of *Callionymus Lyra*, or gemmeous dragonet,* I think it proper to mention, that the specimen in my possession contained a milt, or soft roe. This fact may not be without interest, as it confirms a similar occurrence, in respect to the fish before us, which is reported by Dr. George Johnston, of Berwick. That the matter in the present case might have every justice done it, as far as circumstance would allow, I had recourse to the following expedient. On turning out the the substance and satisfying myself as to what it was, I called in two females, the one an experienced housekeeper, and the other an individual who is employed in cutting up and preparing fish for the market, and who, in this manner, passes some thousands annually through her hands. Without any previous remark, I requested them to tell me, if they could, what sort of thing this was, directing their attention to the substance before me. Both agreed in at once pronouncing it to be a milt. This circumstance fortifies the opinion, entertained by Yarrell, that the sordid and the gemmeous dragonet, are two distinct, independent, and well-marked species. Of this, I have for my own part, no doubt whatever.

Following these, I now introduce a very beautiful stranger, in the person of the *Belone vulgaris*, the garfish, or, as it is called upon this coast, the green-bone. The specimen in my possession was extracted from its aqueous element, in September of this year, off the Bay of Gamrie, at a depth of sixteen fathoms. Its capture was in consequence of its audacity in attacking a mackerel line. It would seem that my two authorities speak of this fish as occurring on the Scottish coast, only in the Firth of Forth. By what I can learn, however, an example or two are commonly caught off our stations here in the course of every year.† The present specimen is twenty-six inches in length, being two inches longer than any of those noticed in my two guides.‡ The

* This is the opinion of Neill (Wern. Mem., vol. i. p. 529), and Dr. Fleming seems evidently inclined to agree with him ('British Animals,' p. 208).

† It is also caught at Banff; and, from the circumstance of its having a local name there, the sea-needle, it may be presumed to be by no means uncommon along the whole shore of the Moray Firth.

‡ Mr. West tells me that he has met with a specimen three feet long.

colours are the same as those described by Yarrell ; but the fin-rays coincide with the numbers which are given by Parnell. It took the bait when the line was passing through the water at the rate of, probably, two miles an hour. According to the general opinion of our practical fishermen at these stations, it takes a mussel bait or a piece of the belly of a mackerel. Some of them, however, affirm, that its more common and ordinary food is grub and sand-eels, which they say it extracts by digging down into the soft bottom of the ocean. The contents of the stomach, as examined by myself, certainly indicate a soft molluscous pabulum, the whole being pulpy and passing into a thick mucus. I mention these things, because Yarrell says, that in the works to which he has access, he finds no mention of the nature of its food. ('British Fishes,' vol. i. p. 393.)

My next species is one of a very slippery character, being the *Myxine glutinosa*, or glutinous hag. This fish does not appear in the roll of those which are given by Dr. Parnell as the finny inhabitants of the Firth of Forth. Yarrell says, that as a British fish, the *Myxine* occurs most frequently on the eastern coast ('British Fishes,' vol. ii. p. 463); and he particularizes Scarborough and Berwick as localities where it may be met with. He describes it, moreover, as being without eyes; but Dr. Dickie, of Queen's College, Belfast, to whom I transmitted specimens from this locality, assures me that it has eyes. On minute examination, I find that this is the case. They are, however, not very readily discernible, in consequence of their being covered over with skin. Naturalists, perhaps, would on this account describe them as rudimentary.

The Sea Bream (*Pagellus centrodontus*), has now become a common fish on this coast. An intelligent fishcurer informs me that it has vastly increased during the course of the last three years; and that, at the present moment, it is quite abundant. Yarrell's description of it appears to be perfect, unless that he overlooks a faculty possessed by its snout, which I find is commonly capable of a protrusion of half an inch. Of this fish Dr. Parnell observes that, as we advance farther north on the east coast of Scotland, it seems to become scarcer than in the south; and that in the Firth of Forth very little is known regarding it, its appearance there being of rare occurrence. He adds, however, that two specimens have been noticed in the Firth just mentioned. ('Fishes of the Firth of Forth,' p. 208). As a viand it is not in greater favour here, than it would seem to be in other localities. By way of variety, I have caused to be tried the improved method of cookery suggested for it by Mr. Yarrell ('British Fishes,' vol. i. p.

209); but, with all due deference to his skill and philosophy in the culinary art, those who tasted of it, as prepared according to his receipt, were, without exception, of opinion that it was very indifferent eating; and that, although at no time good, it is, nevertheless, least displeasing when it is merely subjected to the simple operation of the frying-pan.

In the course of last year, and during the season of summer, a fine specimen of the short sunfish (*Orthogoriscus Mola*), and another of the fishing frog (*Lophius piscatorius*), were brought ashore by the fishermen of Pennan. The former measured four feet two inches in length, and had the caudal fin much more deeply scalloped than it appears in the cut given of this fish by Yarrell. The latter seemed more compressed horizontally than one would be likely to imagine from looking at the first figure which appears of the fishing frog, in that gentleman's valuable history of 'British Fishes.'

In the division Radiata, I shall at present only take notice of a most lovely specimen of the *Goniaster equestris*, or knotty cushion star, which was drawn from deep water off Troup Head, in the month of June, last year. "This cushion star," says Mr. E. Forbes, "is one of the rarest and most beautiful of our native starfishes." ('British Starfishes,' p. 126). I learn, however, that it is by no means very unfrequent on this particular line of coast.* The example to which I am alluding, answers so minutely to the very accurate description given of this species by the gentleman just now named, that I shall only observe that the colour of the upper surface was, when the specimen was fresh, a fine rich cream-yellow, intermingled with the faintest tint of pink; the under surface was a little more pale; and the base of every mammiform tubercular spine was surrounded by a ring or circle of bright but delicate pink. Perhaps, also, the angles, or corners, are rather more obtuse than those which are shown in the cut given by Mr. Forbes of this species.

As regards the Crustacea, I have, in all probability, obtained only three specimens, which are worthy of being named. The first is the *Lithodes Maia*, or northern stone crab, which, as I am informed, is now and then met with upon our coast. "This remarkable species," observes Bell, "must be considered as one of the rarer of our British Crustacea." He describes the colour as yellowish red, the spines darker, the under surface paler. The colour of the specimen in my possession, when it newly came out of the water, was a burnished

* I have myself, during the course of the present summer, obtained four specimens of it.

dullish scarlet. In other respects, it accorded with the account given by the writer now mentioned of this particular species. The second is the *Portunus puber*, or velvet swimming crab. It exhibited, when fresh, a great assemblage of tints, the prevailing one being purplish brown, the others blue and dull red. The velvety appearance which it presents, is very striking. It would appear to be rather common on some parts of the English coast; but, so far as Mr. Bell has been able to learn, it does not seem to have been hitherto noticed to the north of Berwick. The third is the *Galathea strigosa*. In an English edition of 'Cuvier's Animal Kingdom' (1834), I find the following references under the name of this species:—Penn. Brit. Zool. iv. 14. Leach, Malac. Brit. 28, b. The remarks of Cuvier himself, in regard to this beautiful although diminutive crustacean, are very brief and unsatisfactory; and, not having access to any of the authorities which he has indicated, I am, in consequence, unable to determine the value of the species as viewed in connexion with the locality from which I obtained it.

G. HARRIS.

Proceedings of the Zoological Society.

Monthly General Meeting, November 7, 1850.—W. YARRELL, Esq., V. P., in the chair.

His Excellency The Baron Brunow, J. S. Gaskoin, Esq., R. Hartley Kennedy, Esq., and G. Routledge, Esq., were elected Fellows. Thomas Brooksbank, Esq., was proposed as a candidate for the Fellowship.

The Report of the Council stated, that the number of visitors to the Gardens during the current year has been 344,590, and that there has been an increase in consequence, of £5,600 in the receipts as compared with the corresponding period of 1849. Upwards of eighty animals have been added to the menagerie since the meeting in September, by purchase and donation. The principal objects of interest are a polar bear, three grisly bears, and a male brush turkey (*Talegalla Lathamii*), of which species the Society had previously only obtained a female. The principal gifts are a lioness from Mosambique, presented by Her Majesty the Queen of Portugal; a lioness, presented by Gen. Sir Harry Smith, Governor of the Cape; and a herd of reindeer, presented by W. C. Domvill, Esq. The first portion of a collection, which has been obtained in Ceylon, by Alexander Grace, Esq., reached the Gardens on the 1st inst., and will be regarded with interest, as coming from a country of which the Zoology is still very imperfectly known.

The first evening meeting will take place at the Society's house, on Tuesday, November 12th, when, among other papers, Dr. Mantell will make a communication on the discovery of a living specimen of *Notornis* (a bird hitherto only known in a fossil state), in the Middle Island of New Zealand.

November 12.—MR. YARRELL, Esq., V. P., in the chair.

Professor Owen read a paper 'On *Dinornis*: Part V., on the cranium of the large species called *giganteus* and *ingens*.' He commenced by referring to a former memoir, in which four generic types of structure had been determined in fossil crania of birds from New Zealand,—*viz.*, *Nestor*, *Notornis*, *Palapteryx*, and *Dinornis* proper; and proceeded to describe an additional series of fossil skulls obtained by Governor Sir George Grey, from a cave in the district, which lies between the River Waikato and Mount Tongariro, in the North Island. The most remarkable of these specimens was an almost entire skull, measuring eight inches in length, and five inches across the broadest part of the cranium; which in the extent of the ossified part of the mandible and its downward curvature, resembled the smaller skull described in a former memoir, and there referred to *Dinornis*. In the structure of the occiput and base of the cranium this large skull more resembled the characters of that ascribed to *Palapteryx*. The indications of the muscular attachments, and the form and size of the massive beak bespoke the great power and force with which it had been habitually applied in the living bird. Its anatomical characters were minutely detailed. Comparisons of the area of the occipital foramen for the transmission of the spinal marrow with that of the spinal canal in different vertebræ, were made with a view of determining the species to which the cranium in question might belong; and the peculiar contraction of the spinal canal in the vertebræ of *Dinornis*, as compared with that in the ostrich, was pointed out. The inference deduced was, that the cranium, notwithstanding its great size, belonged probably to the species called *Palapteryx ingens*, which was the second in point of size. A mutilated cranium of a much younger bird, showing all the sutures, but of nearly equal size with the skull first described, might belong to the *Dinornis giganteus*. Two crania referable to two distinct species of smaller birds of *Palapteryx* were described, and sections of the cranium were shown to demonstrate the form and character of the brain. In the collection transmitted by Governor Grey, Prof. Owen had, for the first time, recognized a portion of a diminutive wing-bone, similar, in the absence of the usual processes for the muscles of flight, to that in the *Apteryx*, and confirmatory both by this character and its extreme rarity, contrasted with the abundance of vertebræ and leg-bones that had been transmitted, of the inference as to the rudimental condition of the wings in the *Dinornis* and *Palapteryx*. The memoir concluded with a description of a cranium of the *Notornis*, more perfect than that fragmentary one on which the affinities of that bird to the *Rallidæ* or *Rail* tribe had originally been founded, and its generic distinction from *Porphyrio* established. The specimen exhibited confirmed the accuracy of the conjectural restorations in the figure of the original specimen in a former volume of the 'Transactions of the Zoological Society.'

Dr. Mantell read the following 'Notice of the Discovery by Mr. Walter Mantell, in the Middle Island of New Zealand, of a living specimen of the *Notornis*, a bird allied to *Brachypteryx*, and hitherto unknown to naturalists except in a fossil state.'

"It was in the course of last year, on the occasion of my son's second visit to the south of the Middle Island, that he had the good fortune to secure the recent *Notornis*, which I now submit, having previously placed it in the hands of the eminent ornithologist, Mr. Gould, to figure and describe. This bird was taken by some sealers who were pursuing their avocations in Dusky Bay. Perceiving the trail of a large and unknown bird on the snow, with which the ground was then covered, they followed the footprints till they obtained a sight of the *Notornis*, which their dogs instantly

pursued, and after a long chase, caught alive in the gully of a sound behind Resolution Island. It ran with great speed, and on being captured, uttered loud screams, and fought and struggled violently. It was kept alive three or four days on board the schooner, and then killed, and the body roasted and eaten by the crew, each partaking of the dainty, which was declared to be delicious. The beak and legs were of a bright red colour. My son secured the skin, together with very fine specimens of the Kapapo or ground parrot (*Strigops*), a pair of *Huias* (*Neomorpha*), and two species of *Kiwikiwi*, namely *Apteryx Australis* and *A. Oweni*. The latter very rare bird is now added to the collection of the British Museum. Mr. Walter Mantell states, that according to the native traditions, a large rail was contemporary with the Moa, and formed a principal article of food among their ancestors. It was known to the North Islanders by the name of "Moho," and to the South Islanders by that of "Takahé"; but the bird was considered by both natives and Europeans to have been long since exterminated by the wild cats and dogs; not an individual having been seen or heard of since the arrival of the English colonists. On comparing the head of the bird with the fossil cranium and mandibles, and the figures and descriptions in the 'Zoological Transactions' (Plate 56), my son was at once convinced of their identity. It may not be irrelevant to add, that in the course of Mr. Walter Mantell's journey from Banks' Peninsula along the coast to Otago, he learned from the natives that they believed there still existed in that country the only indigenous terrestrial quadruped, except a species of rat, which there are any reasonable grounds for concluding New Zealand ever possessed. While encamping at Arowenua, in the district of Timaru, the Maoris assured them that about ten miles inland there was a quadruped which they called *Káureke*, and that it was formerly abundant, and often kept by their ancestors in a domestic state as a pet animal. It was described as about two feet in length, with coarse grisly hair; and must have more nearly resembled the otter or badger than the beaver or the *Ornithorynchus*, which the first accounts seemed to suggest as the probable type. The offer of a liberal reward induced some of the Maoris to start for the interior of the country where the *Káureke* was supposed to be located; but they returned without having obtained the slightest trace of the existence of such an animal: my son, however, expresses his belief in the native accounts, and that if the creature no longer exists, its extermination is of very recent date. In concluding this brief narrative of the discovery of a genus of birds once contemporary with the colossal Moa, and hitherto only known by its fossil remains, I beg to remark, that this highly interesting fact tends to confirm the conclusions expressed in my communications to the Geological Society, namely, that the *Dinornis*, *Palapteryx*, and related forms, were coeval with some of the existing species of birds peculiar to New Zealand, and that their final extinction took place at no very distant period, and long after the advent of the aboriginal Maoris."

Mr. Gould then read a paper pointing out the zoological characters of the bird discovered by Mr. Mantell, which he had no hesitation in identifying as the species formerly characterized, from its osseous remains, by Prof. Owen under the name of *Notornis Mantelli*. Mr. Gould in adverting to the extreme interest with which the present existence of a species which was certainly contemporary with the Moa must be regarded, pointed out from the preserved skin, which was on the table, how accurate a prevision of its character had been made by Prof. Owen, when investigating the fragments from which our first knowledge of it had been derived.

November 26.—R. H. SOLLY, Esq., in the chair.

A paper by Mr. Strickland 'On the Birds of Kordofan,' was read. It enumerated 112 species which had been collected by Mr. Petherick; and of which three were altogether new, and several not previously enumerated as natives of North-east Africa. Mr. Strickland also distinguished those species which are common to West Africa, determined principally by reference to Dr. Hartlaub's valuable list of West-African birds in the 'Verzeichniss Hamburgischen Gymnasium.'

Mr. Gray read a synopsis of the species of deer, including the description of a new species of *Cariacus* from California, presented to the Society by Lieut. Jones, R.N., and now living in their menagerie. The most interesting portion of the paper had reference to the Brockets of South America; of which two species are now living in the menagerie, and three or four at Knowsley. These [species were illustrated by drawings from life, which had been executed for the Earl of Derby by, Mr. Wolf.

Mr. Gaskoin communicated an account of suspended animation, during four years at least, in a specimen of *Helix lactea* now living in his possession. A remarkable feature in this case is, the fact that utero-gestation was suspended, and resumed its process with the resumption of vitality.

Mr. L. Fraser communicated descriptions of five species of undescribed birds in the collection of the Earl of Derby. The most conspicuous of them is a beautiful species of curassow, now living at Knowsley, which was acquired during the present year. Mr. Fraser gives to this bird the name of *Crax Alberti*: having on a previous occasion dedicated a fine species of crowned pigeon to Her Majesty under the name of *Goura Victoriae*.

The next paper read was, 'An Account of Fishes discovered or observed in Madeira since the year 1842,' by the Rev. R. T. Lowe. The number of species enumerated is eighteen; of which it will be sufficient to mention a new type of *Muraenidæ*, obtained by the Duke of Leuchtenberg during his late residence in Madeira. It is described under the name of *Leptorhyncus Leuchtenbergi*.

Dr. Hartlaub communicated a figure and some account of *Turdus vulpinus*, described by him in the 'Revue et Magazin de Zoologie' in 1849. The only known example of this bird exists in the Museum at Hamburg.

Monthly General Meeting, December, 5.—ADMIRAL BOWLES, M.P., V. P., in the chair.

Thomas Brooksbank, Esq., James Busain, Esq., and Captain Gimblett, were elected Fellows. James Crowdy, Esq., and Lancelot Dent, Esq., were proposed as candidates for the Fellowship.

The Report of the Council stated that the visitors to the Gardens during November, exhibited an increase in their number of 4060 as compared with the corresponding month of last year, making a total excess of 186,887 in 1850 over 1849. A comparison of the income showed an improvement of £5,801 15s. 11d., which will be further increased by the receipts of the current month. The Council have received communications from Lord Harris, Governor of Trinidad, and from Lieut.-Col. Butterworth, C.B., Governor of Singapore, of their respective intentions to transmit several valuable additions to the collection in the course of the ensuing spring.—*D. W. M.*

Proceedings of the Entomological Society.

December 2, 1850.—G. R. WATERHOUSE, Esq., President, in the chair.

The following donations were announced and thanks ordered to be given to the respective donors; 'The Zoologist,' for December; presented by the Editor. 'Entomologische Zeitung,' for October and November; by the Entomological Society of Stettin. 'Separat-Abdruck der Zeitschrift der Entomologische Gesellschaft zu Breslau,' by Herr Zeller, Honorary Foreign Member. 'Abhandlungen de Zoologisch-Mineralogischen Vereins zu Regensburg,' by Dr. Herrich-Schäffer: and an 'Article on the Fulgorellæ,' by Dr. Schaum. Also five specimens of *Cheimatobia boreata*; presented by Nicholas Cooke, Esq.

John Gray, Esq., of Wheatfield House, near Bolton, and J. Newman Tweedy, Esq., of 47, Montagu Square, were balloted for, and elected Members of the Society.

The President announced that the requisite number of subscribers for the 'Insecta Britannica' being nearly obtained, the committee had decided to proceed with the publication of the series, and that the first volume would be published early in 1851.

Mr. Evans exhibited a *Lampyrus* from Rio de Janeiro, and read the following extract of a letter, dated Rio de Janeiro, November 12th, 1849.

"I send you at last a specimen of the Rio firefly, which I certify to having captured myself while in the act of emitting light, and further, that having taken it home, I placed it under a tumbler in a dark room, and was enabled, by the light it emitted, to read letters printed on a paper on which the glass was put. P.S.—Near the caudal extremity underneath, is a white enamel-like spot, which emits the light.—*F. Pennelly*."

Mr. Evans communicated an extract from the Sydney Morning Herald, of the 22nd of June last, announcing the establishment, in that city, of the Australian Society for the investigation of scientific subjects, and stating that at the first meeting, the attention of the Society was directed by the Rev. G. E. Turner, to a grub, which is found in vines, and excites some alarm among the vine-growers of the colony.

Mr. Evans exhibited a *Scolopendra electrica*, and Mr. Westwood referring to its luminous properties, stated as a fact that had come within his own observation, that *Lithobius forcipatus* also emitted light.

Mr. S. Stevens exhibited some fine specimens of the variety of *Ornithoptera Priamus*, from Richmond River, New Holland, and also that singular *Lepidopterous* insect, *Myrmecopsis Eumenides*, *Newm.*, which so resembles a *Hymenopterous* insect.

Mr. Stainton exhibited five new species of British *Tineidæ*: viz., *Coleophora partitella*, Z., *C. vulnerariæ*, Z., *C. lithargyrinella*, Z., *C. juncicolella*, Sta., and *Elachista Treitschkeella*, F-v-R., and read the following notice, by Mr. Jordan, of a small *Lepidopterous* larva (probably of the genus *Goniadoma*).

"During a short excursion in Kent, in the month of August last, I gathered and brought to town amongst other wild flowers, several specimens of *Origanum vulgare*. On the next day, as I was looking at the flowers, two buds from one of the heads of this plant seemed to be crawling about, and on closer examination, it proved that these two were in reality the tents of larvæ of some minute *Lepidopterous* insect. They so exactly resembled a single flower-bud of the *Origanum*, that it was difficult to distinguish them when at rest, from those in the head around them; the lower part of the case bearing a complete resemblance to the calyx, and the upper portion to the

unexpanded corolla both in colour and form ; in fact these were the materials out of which the case was formed. Both larvæ unfortunately died in two or three days. The *Origanum* was gathered in a small chalk-pit, near Darenth Wood, where no doubt the larva may again be met with another season."

Mr. Douglas read a letter from Mr. E. Wilson, in which it was stated, that in the United States it was impossible to preserve a collection of insects of any extent ; as in some years during the very hot weather, owing to a peculiar state of the atmosphere, everything that was closely shut up became covered with a white hoar, and that from this cause a pair of boots in a cupboard would become as white as snow ; that in order to guard against these sudden attacks, the cases of birds at the Academy of Philadelphia, instead of being closed as they are in this country, have chimneys to cause an artificial draught, and every box of insects is required to be opened during the continuance of these attacks so as to expose them as much as possible to the air.

Mr. Westwood stated that M. Guérin-Ménéville, in his researches on insects destructive to tobacco, had found that many different species fed thereon. One of these, a new species, named *Catorama Tabaci*, he at first thought was allied to the genus *Ptinus*, but afterwards found it more nearly related to *Dorcatoma*. In this latter genus he had been able to clear up the doubts as to the number of joints in the antennæ (which had been variously stated by different authors to be eight, nine, ten and eleven) ; having determined from the examination of two specimens that the real number was ten in the male and nine in the female. Another species detected by M. Guérin-Ménéville was *Xyletinus serricornis*. Mr. Westwood said that in a cigar forwarded to himself for examination, he had found the pupa of a beetle, the abdominal portion of which was encased in the skin of the larva, the skin itself, including the head, remaining perfect, and he thought probably that the species was *Xyletinus serricornis*. The cigar purported to be from Havannah, but if the insect should prove to be *H. serricornis*, this was very doubtful, as that beetle was North American, and the observations of M. Guérin went to show that the native country of tobacco might be ascertained by the insects found in it.

Mr. Wilkinson thought this idea of M. Guérin fallacious, as tobacco in this country coming from different places, was piled in the bonded warehouses often for a considerable time, and insects might easily travel from one package to another.

The President observed that many insects were found all over the world, instancing the species of *Dermestes* and *Trogosita Mauritanica*, and that it remained to be proved that the beetles referred to were peculiar to one country.

Mr. Saunders then read the following note :—

In a communication I have lately received from Mr. H. G. Harrington, dated at sea, the 7th of October last, in lat. 17 deg. S., long. 35 deg. W., he says, "I have taken two very beautiful moths decidedly exotic, one in lat. 27 deg. 36 min. N., long. 19 deg. 34 min. W. ; the other in lat. 13 deg. 12 min. N., long. 24 deg. 32 min. W., and three beetles south of the line a few miles." Laying down these positions on a good chart, I find that the first is about eighty miles from land, nearly west of the Island of Tierso, one of the Canary group ; and the second is about ninety miles from land, due south of Brova, one of the Cape de Verd Islands. The exact position where Mr. Harrington took the beetles is not so easy to determine ; but looking to the route taken by the ship, Sir E. Parry, which may be very nearly ascertained from the positions given by Mr. Harrington in his letter, it is evident that the distance from the nearest land, that of the small island of Fernana Noronha, was at least 240 miles, and from the

coast of Brazil, 350 miles. The small island alluded to is only about two leagues in length, and is about seventy leagues distant from the mainland of Brazil. Facts so well authenticated as the foregoing on the flight of insects are very interesting, and it is well that they should be recorded, although at present, the names of the insects which have ventured out so far to sea, or have been driven by necessity to undertake a long flight over such an extent of water, cannot be ascertained. I hope hereafter to procure from Mr. Harrington more information on this point, which I shall have pleasure in communicating to the society.

The President observed that once when crossing the channel to Dublin in very calm weather, the vessel was surrounded the whole distance by insects of all kinds, of which as most conspicuous he had noticed the common white butterfly, which invariably flew close to the water.

Mr. Bond stated that the larvæ of *Acherontia Atropos* had been unusually common in Cambridgeshire this autumn, and that two had squeaked audibly while yet in the pupa state.

The President announced that Part 3, of Vol. i., new series, of the Transactions, was on the table.—*H. T. S.*

Proceedings of the Microscopical Society of London.

November 13, 1850.—Dr. ARTHUR FARRE, President, in the chair.

Dr. Carpenter made some remarks on Foraminifera, in reference to the paper by Mr. Williamson on that subject, read at the meeting in June last.

Mr. De la Rue described the construction of a dissecting microscope made by M. Nacht.

A paper by J. S. Bowerbank, Esq., ‘On Ciliary Action in the Spongiadæ,’ was read.

After some preliminary remarks, in which some observations of Dr. Dobie on the same subject were alluded to, Mr. Bowerbank stated, that wishing to follow out the investigation, he had, in the autumn of the present year, located himself at Tenby, in South Wales, where the sponge, *Grantia compressa*, examined by Dr. Dobie, is found abundantly. The specimens selected for examination were not more than a quarter of an inch in length, and upon placing one of these beneath the microscope in a closed cell, after a short time the excurrent action commenced and continued steadily for a considerable time, the fecal matter being ejected with much force. On examining the exterior of the same specimen, the incurrent action over the whole of its surface was equally well, although less forcibly demonstrated. Having thus succeeded in seeing the continuous entrance and exit of the surrounding fluid, the great saccular cavity was next examined. This was done by carefully opening the sponge from the entrance of the sac to its base, with a pair of fine scissors, cutting through its compressed edges. The halves thus produced were mounted for examination in a closed cell as before, with the inner surface towards the eye. The sponge was now seen to be composed of angular cells, constructed of triradiate calcareous spiculæ, and packed together like the cells of a honeycomb. They are of the same diameter downwards for the length of about half their own diameter, and then terminate in a perforated

diaphragm, the circular mouth of which is of about half the diameter of the cell above it. Beneath this diaphragm, an elongated cavity or cell extends, and opens on the outer surface of the sponge; the whole length of the cell, from the inner edge of the diaphragm to its termination near the outer surface, being closely studded with tessellated nucleated cellular structure: within the diaphragm, and between the inner termination of the incurrent orifices, are situated the cilia, which are of excessive tenuity, and comparatively of considerable length. Upon focussing the diaphragm, the cilia may be seen in rapid motion within the area of the circular orifice, many of them being tipped with a minute portion of gelatinous or of fecal matter; and the whole of them continually oscillate in a plane parallel to the edge of the diaphragm, occasioning a continual current through its orifice.

Although both the presence and action of the cilia were very clearly shown by this mode of examination, still neither the extent of surface covered by them, nor their insertion, could be determined. By dividing, however, one of these cells through its whole length, which after many trials and failures was at last effected, portions of these, examined in the same manner as in the preceding instances, exhibited ciliary action; and as the vital energy decreased and their motions became languid, one cilium in particular was observed, which continued for nearly half an hour to wave gently backward towards the outer surface of the sponge, and then rapidly forward towards the mouth of the diaphragm. Many other cilia were observed, but none so distinctly exhibited their peculiar action as this; and it was found that although it may be highly probable that the cilia are based upon, or spring from among, the tessellated cells, it was not possible to ascertain the fact precisely; but sufficient was shown not only to prove the existence of ciliary action in the sponge, but also, by the peculiar motion just described, to account for the flow of the currents in one direction.

—J. W.

December 11, 1850.—DR. ARTHUR FARRE, President, in the chair.

A paper by P. H. Gosse, Esq., ‘On the Notomata parasita, *Ehrenb.*, a Rotiferous Animal inhabiting the Spheres of *Volvox globator*,’ was read.

After stating that this animalcule was first described by Prof. Ehrenberg in 1835, Mr. Gosse stated that he first observed it, June 26th, 1850, in specimens of *Volvox globator* in water, given him by Alfred Rosling, Esq. He afterwards obtained it from a little pool near the railway-station at Leamington, in Warwickshire. This creature is too small to be seen by the unassisted eye, its greatest length being about $\frac{1}{160}$ th of an inch. The author minutely described the anatomy of this animalcule, and also gave an account of its curious habits, it being parasitic in the elegant *Volvox globator*, within the globe of which it lives at ease, swimming about like a gold fish in a glass vase. It appears to subsist upon either the green granules with which the gelatinous surface of the *Volvox* is studded, or else upon the embryo clusters. It often happens that two or more Notomata are seen in the same *Volvox*, and Mr. Gosse stated that in one individual he had met with as many as four, with an egg besides. They are to be found chiefly in the smaller *Volvoxes*, and especially in those which have the embryos in a very immature state. They have also been met with in the embryos themselves when almost grown and nearly ready for escape from the parent globe. The operations of this parasite do not appear to occasion any perceptible inconvenience to the containing *Volvox*. In some spheres, eggs are found with Notomata; in others eggs alone.

Mr. Gosse also stated his opinion that it was possible that this parasite is always hatched in a parent Volvox, but that the embryonic globe is entered from without. He next described the eggs, some of which are smooth, and others covered with prickles, and he suggested that, as in these animals the sexes are distinct, both as regards size, form and structure, the smooth eggs might be those of females, and the prickly ones those of males. He concluded with some remarks on the habits of this curious parasite.

Another paper, by G. C. Handford, Esq., 'On a White Mirror for the Microscope,' was also read.

Wishing to correct the unpleasant glare, and other inconveniences attendant on the reflected light of an ordinary silvered glass mirror, the author was induced to construct one by which he considers these defects may be remedied. It consists of a thin concave glass, three inches in diameter, the back of which is rendered white by means of plaster of Paris or of zinc paint. This is mounted in brass and fitted over the frame of the ordinary silvered mirror, thus not requiring the latter to be removed. The advantage gained by this mirror he stated to be, that the whole of the rays reflected from the surface of the plaster of Paris were brought into one focus, together with those reflected from the surface of the glass, and thus a more equal and also a more brilliant light is produced than by any of the means heretofore employed for the purpose of getting a perfectly white light.—*J. W.*

Occurrence of the Opah or King-fish at Redcar.—A splendid specimen of the opah or king-fish, measuring in length three feet five inches, and in depth (including dorsal fin) two feet five inches, and weighing 72 lbs., was taken yesterday at this place. Another specimen of Ray's bream was found on the beach last week.—*T. S. Rudd*; Redcar, November 18, 1850.

Occurrence of Ray's Bream and Argentine at Redcar.—Two other specimens of Ray's bream have been found on our beach this week. The fishermen of this place inform me that the above fish only makes its appearance on this part of the coast during the months of October, November and December. The argentine only occurs here from January to May; where they are to be met with during the rest of the year I have not been able to ascertain, but conjecture they migrate into the river Tees. The argentine, when found, has precisely the same cucumber-like smell as the smelt.—*Id.*; December 4, 1850.

Occurrence of Deilephila Celerio in Cumberland.—A very fine specimen of *Deilephila Celerio* was taken at rest on a window-shutter, at Brampton, near Carlisle, on the 5th of last month (October); is not this very late in the season? The specimen is now in my cabinet, and is in beautiful condition. I also got one a short time ago, taken in this town.—*J. B. Hodgkinson*; 12, Friday Street, Preston, November 23, 1850.

Note on Cheimatobia borearia.—When a previously supposed rare insect occurs in any plenty, it may fairly be presumed that its supposed rarity originated in our not

having a proper knowledge of its habits. This has been evidently the case with *Cheimatobia borearia*, for with the exception of three or four captured by Messrs. B. and N. Cooke, in 1848, and one taken by myself last year, the insect had escaped notice, until the appearance of the last published sheet of Mr. H. Doubleday's valuable 'List,' when the insect was identified: previous to that time, the captured specimens were looked upon as varieties of other species. By the perseverance of Mr. N. Cooke, the habits of the species were detected, and it has turned up in considerable numbers in Delamere Forest, the same locality in which *Hypenodes humidalis* occurred.—James Cooper; Museum, Warrington, November 17, 1850.

Note on Cheimatobia borearia.—This appears to be a very common insect, at least in the locality where we find it here, a part of Delamere Forest, where there are plenty of birch trees. It is found in abundance during the evening, by searching the birch trees, or fern, &c., in their neighbourhood. At dusk a few females may be seen creeping up the trees, and in about an hour afterwards the moth may be taken in pairs. In the males the wings vary in expanse from $1\frac{1}{8}$ inch to $1\frac{1}{2}$ inch. The time of its appearance commences in the last week of October: the allied species, *C. brumaria*, occurs with it, but is not nearly so numerous in the same situation.—Benjamin Cooke; Warrington, November 12, 1850.

Capture of Lepidoptera near Meonstoke.—The following are some of my best captures this season, in the neighbourhood of Meonstoke. I was there but a short time; but saw enough to convince me that the place would prove, to a collector who had the time to search it thoroughly, peculiarly rich in Lepidoptera. I might have included many other good insects in my list.

Lithosia griseola. August 5, fifteen, from the wild clematis.

Lithosia stramineola. August 7, three.

Euthemonia Plantaginis. June 19, fir-trees, by beating.

Platypteryx Hamula. September 23, one poor specimen, beaten from hazel. Is not this very late?

Triphena fimbria. August 10, Stoke wood; three specimens from the long grass.

Pyrausta cingulalis. August 12, three, from Beacon Down.

Botys flavalis. Beacon Down; abundant. I did not find it till August 12, when nearly all the specimens were so faded as to be scarce worth capturing.

Botys pandalis. August 10, in the long grass, in Stoke Wood; twenty-four specimens.

Botys hyalinalis. June 25, one, from the same place.

Geometra papilionaria. August 10, one, beaten from birch, in Stoke Wood.

Epione advenaria. June 21 to 25, ten, from hazel.

Ennomos lunaria. June 18, Stoke Wood.

Tephrosia extersaria. June 21, one, from privet.

Anaitis plagiaria. August 9 to 27, abundant in clover fields.

Anticlea derivaria. May 10, one, beaten from hawthorn.

Anticlea rubidaria. June 17, two, from wild clematis.

Phibalapteryx tersaria. June 17 to 22, ten specimens, from wild clematis.

Phibalapteryx vitalbaria. June 19 and August 7, seven specimens, from the same.

Xerene adustaria. August 10, two, from hazel.

Xerene procellaria. June to August, not uncommon in the hazel copses.

Bapta taminaria. May 30, Stoke Wood, one specimen only.

Bapta temeraria. May 28 to June 13, thirteen, beaten from oak.

Ephyra trilinearia. June 19, nine, from the birch wood on Beacon Down.

Eupithecia coronaria. August 7, Stoke Wood.

Eupithecia subfulvaria. August 12, one, from birch, on Beacon Down.

Minoa Euphorbiaria. June 19, one, beaten from hazel.

Tortrix Cratægana. June 27, oak.

Peronea Schalleriana and *P. comparana*. Are not these identical? I have taken intermediate varieties of every shade of colour; and never found *comparana* where *Schalleriana* was not plentiful. Of the latter I have a beautiful variety, where the red patch is suffused over the greater portion of the anterior wings.

Phoxopteryx derasana and *P. diminutana*. August 11, one of each, from hazel, Stoke Wood.

Pædisca profundana. August 19, seven, from oak. This includes three of the variety *æthiopana*.

Pyrodes Rheediana. June 25, one, from the bramble.

Crambus falsellus. August 6, one, from an old wall.

Crambus petrificellus? August 12: this insect is much smaller than *petrificellus*, and has something the appearance of a hybrid between that insect and *C. genicleus*: I took it on Beacon Down.

Nemotois Frischella. August 19, three, from the great scabious.

Plutella sequella. September 23, one, from hazel.

Hyponomeuta plumbella. August 7, 19, and September 3, twelve, from hawthorn.

Hyponomeuta cognatella. August, this pretty species was tolerably abundant; frequenting the wild clematis.

Depressaria Alstræmeriana. August 21, Stoke Wood.

Depressaria purpurea. August 7 and 21, two, beaten from hazel.

Depressaria depressana. August 12, one, attracted by light.

Gelechia luculella. August 21, two, from bramble.

Pterophorus Hieracii. August 5 to 19, fourteen, from the long grass, in Stoke Wood.—*P. H. Newnham*; *Oxford, November 2, 1850.*

Captures of Lepidoptera at Hornsey, Wicken and Burwell Fens, between June the 8th and July 1st, 1850.—

Lælia cænosa. One larva, found feeding on the common reed; bred a fine male.

Leucania pudorina. Common, at sugar.

Nonagria Arundinicola. Two, at sugar.

Luperina abjecta. One, attracted by light.

Neuria Saponariæ. Nine, at sugar.

Hadena Atriplicis. Seven, at sugar.

Hydrelia uncana. Thirty, flying in the day.

Nascia ciliialis. Two, at sugar.

Harpalyce sagittaria. Three, by beating.

Lobophora sexalisaria. Five, by beating.

Phibalapteryx polygrammaria. Ten, flying at night.

Phibalapteryx lignata. Flying at night.

Eupithecia sparsaria. Thirty, at sugar and by beating.

Eupithecia Piperaria. Fifty-four, by beating.

Depressaria Angelicella. Six, at sugar.

Psecadia funerella. About fifty, flying at night.

Chilo mucronellus. About fifty, flying at night.—*J. Bond* ; *Kingsbury*, December 12, 1850.

Capture of Lepidoptera at Almondsbury, Gloucestershire.—I have little to report this month, unless it be that the splendid weather of September appears to have been favourable to the development of the autumnal Lepidoptera. Through September, I took, by lantern, off a garden-flower called by our "old wives" 'Aaron's rod,' amongst twenty-one commoner species, *Triphæna interjecta*, *Noctua bella*, *Anthocelis lunosa*, *Xanthia citrigo*, *Epione apiciaria*, *Harpalyce achatinaria*, *Endorea coarctata* and *Depressaria propinquella*. From the end of September till the end of October, the Scotch firs near my house produced me *Anthocelis litura*, *Xanthia cerago*, *Xylina rhizolitha*, *X. semibrunnea* and about ten other common species. From the beginning of October to this date, the ivy in my garden, and in our village, has yielded me, freely, the following thirty-three species, besides the rarer ones afterwards named; viz., *Phlogophora meticulosa* (that elegant pest), *Caradrina cubicularis*, *Triphæna connuba* and *orbona*, *Segetia xanthographa* (worn), *Noctua C-nigrum*, *Agrotis segetum* and *suffusa* (very fine), *Orthosia lota*, *Anthocelis lunosa* and *litura*, *A. pistacina*, *Scoliopteryx Libatrix*, *Xanthia ferruginea*, *X. cerago*, *Glæa spadicea*, *G. Vaccinii* and *polita*, *Scopelosoma satellitia*, *Miselia Oxyacanthæ*, *Polia flavicincta*, *Hadena protea*, *Plusia Gamma*, *Stenopteryx hybridalis* (worn), *Eubolia mensuraria* (worn), *Thera variaria*, *Harpalyce russaria*, *Ypsipetes elutaria*, *Cheimatobia dilutaria*, *C. Brumaria*, *Eudorea coarctata*, *Plutella porrectella* and *Pterophorus pterodactylus*. The scarcer kinds from the ivy have been, *Orthosia macilenta*, *Hub.*, one; *Xanthia citrigo*, one; *Dasyampa rubiginea*, three (in first week of November), I missed a fourth, by its dropping too quickly through the ivy; *Xylina rhizolitha*, fifteen; *X. petrificata*, twelve; *X. semibrunnea*, twenty-five; *Calocampa exoleta*, one; *C. vetusta*, one seen, but lost, by dropping through the ivy, and *Phæsole psittacaria*, one. My friend, the Rev. Joseph Greene, of Lower Guiting, on the Cotswolds, tells me he took *vetusta* on the ivy, near his house, at 7 P.M., October 23, and also one *exoleta*. His locality is very elevated and cold, yet he has had his assiduity rewarded by many good things. Though too late for this season, I have hopes that this communication may, next year, direct the attention of my brother knights of the "net and pen" to the most probable localities for the *Xylinæ*, &c.—*J. Allen Hill* ; *Almondsbury House*, November 12, 1850.

Impregnation of the Queen Bee.—Mr. Ridsdale's observations on the impregnation of the queen-bee, as recorded in the 'Zoologist' (Zool. 2960), brought to my mind a fact which I myself witnessed. In July, 1844, I was walking along the cliffs between Brighton and Rottingdean, when I saw flying towards me what appeared to be an immense humble-bee (*Bombus terrestris*). On its alighting on the grass I ran to the spot, and discovered two humble-bees *in coitû, ut apud muscas mos est*. They remained in this position for a quarter of an hour at least, and then separated and flew away. The fact made an impression upon me at the time, from the obscurity in which the impregnation of the queen of the honey-bee was involved, and I thought I had made a great discovery; but I find, in Dr. Bevan's work on the honey-bee, p. 31, that he was fortunate enough to be an eye-witness of a similar fact. Although reasoning from analogy is said to be dangerous, yet, from these and other instances, it is only reasonable to conclude that the queen of the honey-bee is impregnated in a similar way, though it is singular that the impregnation should, for so long a period,

have escaped the observation of so many diligent inquirers.—*R. Wakefield; Lower Clapton, November 16, 1850.*

Notice of a specimen of the Goniastor Equestris with Six Rays.—This specimen was brought me on the 5th ult., and was taken from twenty fathom water, off the Bay of Gamrie. The diameter of the disk portion is from five to five and a half inches. The greatest distance between the extremities of two opposite rays or arms is nine inches. The madriporiform tubercle is two-eighths of an inch in diameter, and situate one-third of the radial distance from the centre. The colour of the upper surface, when newly out of the water (referring to 'Werner's Nomenclature of Colours') was tile-red; that of the lower surface, between buff-orange and cream-yellow. When recent, the upper surface was turgid, and showed five depressions radiating to the points intermediate between the rays, the fifth depression passing in a line with the external edge of the additional arm or ray. The fluid that dropt from it was tinged of the same hue as that of the soft tuberos thready matter which occupied the interior, and was of an aurora-red tint. Referring to 'Forbes' British Star Fishes,' the normal form of this star-fish is pentangular, although he also notices a specimen of a square form, which is described and figured by Dr. Johnston in the 'Magazine of Natural History' for March, 1836. In the present example, the form which is hexagonal, is therefore to be regarded as abnormal, and the specimen supplies abundant confirmation of this. In the first place, the external depressions are five; secondly, there is the same number of partitions or walls dividing the internal parts; thirdly, the additional arm is rather smaller than any of the others, and the edge-line of the plates on the lower surface somewhat irregular; fourthly, it comes away more abruptly than the others from the disk, and its avenue, instead of terminating in the centre of the fish, terminates in the avenue of the adjacent ray, which, in consequence, has suffered distortion. On these grounds, I should think, the specimen must be set down as an irregularity, and this may have originated in some damage sustained at an early period of its growth.—*George Harris; Manse of Gamrie, October 16, 1850.*

NOTICES OF NEW BOOKS.

*Game Birds and Wild Fowl.**

MR. KNOX is already so well known to our readers as an acute and patient observer of living birds that an introduction is perfectly unnecessary. His 'Ornithological Rambles in Sussex,' of which a full notice was given in a former number, will be fresh in the recollection of our readers. The second work is doubtless called forth by the well-merited success of the first, and we venture to predict that it will prove a still greater favourite. Its getting up is admirable, and the illustra-

* 'Game Birds and Wild Fowl, their Friends and their Foes.' By A. E. Knox, M.A., F.L.S. Van Voorst, 1850.

tions by Wolf will add yet another laurel to the chaplet of that exquisite artist. The author's style is as agreeable as formerly, and the matters discussed have as genuine a flavour of the open air.

Still we do not like this book so well as the 'Rambles.' Mr. Knox is a sportsman and a naturalist: this is no new discovery: it was evident from every page of the 'Rambles;' but in *that* work the naturalist was predominant, the sportsman being kept in abeyance: in *this* the naturalist is in abeyance; the sportsman reigns supreme. The very title of the book seems a misnomer—"Friends and Foes." Alas! from Mr. Knox's teaching, one would think the feathered creation had no friend, and one single foe, and that foe, man! It must not, however, be supposed that Mr. Knox's book is a simple record of slaughter. Interspersed here and there are anecdotes which illustrate the habits, or speak to the tractability of species, and a few of these we shall cite, as more agreeable to naturalists than the destruction of one thousand and twenty-six woodcocks in six days (see p. 45), or five hundred and seventy-four hares in one day (see p. 118); or even than the following list of 'vermin' destroyed on the celebrated Highland property of Glengary, of which list Mr. Knox himself says, "speaking as a naturalist rather than a sportsman, it cannot but be a matter of regret that the excessive protection of the grouse involves the indiscriminate slaughter of so many interesting birds and quadrupeds becoming exceedingly rare amongst us." To this lament we most heartily say, Amen!

" 11 Foxes	285 Common buzzards
198 Wild-cats	371 Roughlegged buzzards
246 Martin-cats	3 Honey buzzards
106 Polecats	462 Kestrels or red hawks
301 Stoats and weasels	78 Merlin hawks
67 Badgers	9 Ash-coloured hawks, or long blue-tailed ditto
48 Otters	83 Hen-harriers, or ring-tailed hawks
78 House-cats, going wild	6 Jer-falcon toe-feathered hawks (?)
27 White-tailed sea-eagles	1431 Hooded or carrion crow
15 Golden eagles	475 Ravens
18 Ospreys or fishing eagles	35 Horned owls
98 Blue hawks or peregrine falcons	71 Common fern owls. This I imagine was the short-eared owl. Surely not the insectivorous nightjar!
275 Kites, commonly called salmon-tailed gledes	3 Golden owls. Probably the white or barn owl
5 March harriers, or yellow-legged hawks	8 Magpies."—Page 116.
63 Goshawks	
7 Orange-legged falcons	
11 Hobby hawks	

In some the names are somewhat ambiguous, but in most instances they are sufficiently clear, and the record sufficiently astonishing, although the preservation of grouse by the destruction of badgers and otters seems rather problematical. The toe-feathered hawks must be the hawk owl, *Strix funerea* of Linneus, a bird abundant in the high latitudes of both continents, and one which makes the species of grouse almost exclusively its prey. The only other record of its having been killed in Britain is in the present number of the 'Zoologist.' We now proceed to more agreeable pickings.

Peregrines. "A friend of Colonel Bonham, the late Colonel Johnson of the Rifle Brigade, was ordered to Canada with his battalion, in which he was then a captain, and being very fond of falconry, to which he had devoted much time and expense, he took with him two of his favourite peregrines, as his companions across the Atlantic.

"It was his constant habit during the voyage to allow them to fly every day, after 'feeding them up' that they might not be induced to take off after a passing sea-gull, or wander out of sight of the vessel. Sometimes their rambles were very wide and protracted. At others, they would ascend to a height as to be almost lost to the view of the passengers, who soon found them an effectual means of relieving the tedium of a long sea-voyage, and naturally took a lively interest in their welfare, but as they were in the habit of returning regularly to the ship, no uneasiness was felt during their occasional absence. At last, one evening, after a longer flight than usual, one of the falcons returned alone: the other, the prime favourite was missing. Day after day passed away, and however much he may have continued to regret his loss, Captain Johnson had at length fully made up his mind that it was irretrievable, and that he should never see her again. Soon after the arrival of the regiment in America, on casting his eyes over a Halifax newspaper, he was struck by a paragraph announcing that the captain of an American schooner had at that moment in his possession a fine hawk, which had suddenly made its appearance on board his ship, during his late passage from Liverpool. The idea at once occurred to Captain Johnson that this could be no other than his much-prized falcon, so having obtained leave of absence, he set out for Halifax, a journey of some days. On arriving there, he lost no time in waiting on the commander of the schooner, announcing the object of his journey, and requesting that he might be allowed to see the bird; but Jonathan had no idea of relinquishing his prize so easily, and stoutly refused to admit of the interview, 'guessing' that it was very easy for an Englisher to lay claim to another man's pro-

perty, but 'calculating' that it was a 'tarnation sight' harder for him to get possession of it; and concluding by asserting in unqualified terms his entire disbelief in the whole story. Captain Johnson's object, however, being rather to recover his falcon than to pick a quarrel with the truculent Yankee, he had, fortunately, sufficient self-command to curb his indignation, and proposed that his claim to the ownership of the bird should be at once put to the test by an experiment, which several Americans, who were present, admitted to be perfectly reasonable, and in which their countryman was at last persuaded to acquiesce. It was this; Captain Johnson was to be admitted to an interview with the hawk (who, by the way, had as yet shown no partiality for any person since her arrival in the New World, but on the contrary had rather repelled all attempts at familiarity), and if at this meeting she should not only exhibit such unequivocal signs of attachment and recognition as should induce the majority of the bystanders to believe that he really was her original master, but especially if she should play with the buttons of his coat, then the American was at once to waive all claim to her. The trial was immediately made. The Yankee went up stairs, and shortly returned with the falcon, but the door was hardly opened before she darted from his fist and perched at once on the shoulder of her beloved and long lost protector, evincing, by every means in her power, her delight and affection, rubbing her head against his cheek, and taking hold of the buttons of his coat and champing them playfully between her mandibles, one after another. This was enough: the jury were unanimous. A verdict for the plaintiff was pronounced: even the obdurate heart of the sea captain was melted, and the falcon was at once restored to the arms of her rightful owner."—Page 177.

Pheasants. "The habit of crowing, indulged in at all hours of the day during the breeding-season, is not restricted to the purposes of love or the hour of rest. The same note is uttered on quitting his perch at early dawn, and the sound of thunder or distant cannon never fails to produce it. How often, though at a distance of thirty miles, have I heard it elicited by the booming of the Portsmouth guns, when the weather was calm, or the wind in a favourable quarter. But the most remarkable instance of this kind that ever came under my notice, occurred on the 11th of March, 1850. It was a clear sunny day, the air cold and frosty, with a gentle breeze from the north-east. I had been riding through Charlton Forest, and had just begun to descend the northern slope of the downs by a rugged path, above the village of Graffham, when I was induced to halt for a moment to

admire the magnificent panoramic view that here suddenly bursts upon the sight. The dark, hanging woods of Lavington clothed the steep hills on one side, while on the other their natural forms were varied by smaller clumps of beech and juniper. Below me lay the long and picturesque valley of the Rother, extending from the borders of Hampshire as far as the eye could reach, and varied with wild, heathery commons, evergreen woods, brown copses, and cultivated fields. Immediately opposite was the elevated range of the lower, green sandstone formation, which forms the southern boundary of the weald of West Sussex; beyond which, again, in the distance, might be seen the blue outline of the Surrey downs, as they stretched far away into the eastern horizon. I had not gazed long upon the magnificent scene, before a deep, hollow booming, or protracted concussion (for it was rather felt than heard), shook the earth for some seconds. At the same moment a pheasant, in an adjoining copse, announced his consciousness of the shock by a sudden crowing, which had hardly ceased, before a second explosion, succeeded after another interval, by a third, the loudest of all, induced every cock pheasant in the woods of Lavington, to sound his note of alarm. As to myself, I confess I was puzzled how to account for the phenomenon. It was quite different from the rumble produced even by the loudest artillery, and the clear cloudless sky forbade the supposition of its being caused by even distant thunder. On my way home, I passed several persons who had heard it, and many of whom had noticed its effects on the pheasants, especially one party of labourers who were employed in repairing a fence near a long hanger (one of the best preserves in the county); they told me that a loud and long-continued crowing proceeded from all parts of the wood for many minutes after the last explosion. They, too, were unable to conjecture the cause of the sound, nor was the mystery unravelled until the following day; when intelligence arrived of the awful explosion and loss of life, at Messrs. Curtis and Harvey's powder-mills, at Hounslow, nearly fifty miles in a direct line from the spot where I heard it."—Page 187.

Capercaillie in Scotland. "Through the kindness of a relative of Lord Breadalbane, I am enabled to add a few particulars connected with the present state and condition of the capercaillie at Taymouth (July, 1850), furnished by the intelligent head keeper, Mr. Guthrie, to whose judicious management their establishment and preservation are in a great measure to be attributed. Ample details of the most approved method of keeping the birds in a state of confinement and of rearing the chicks, nearly similar to that pursued by Mr. Guthrie, are

given in Mr. Yarrell's 'History of British Birds;' but Mr. Guthrie found that the treatment of the chicks, after the eggs had been hatched under domestic hens, was attended with much more difficulty than in the case of the pheasant. Experience showed him that it was necessary to move the coops to different parts of the forest, according to the state of the weather; placing them, on a sunny day, under the shadow of trees or among tall grass or fern; but during damp or wet weather, removing them to dry, bare, or sandy spots. While transporting them from one place to another 'he put the chicks into a small woollen bag, and the hen into a basket covered with a cloth to keep her in the dark.' When a fortnight or three weeks had elapsed he did not think it necessary to move the coops. He remarks, 'After a time I gave the young birds very little food out of hand, except wild berries, and as soon as I got them to feed on the larch branches I considered them safe. The Scotch fir is rather hard for their bills when young.'

"In 1838 and 1839, Lord Breadalbane received from Norway fifty-four adult capercaillie, about two-thirds of which were females. Some of them were liberated in the forest, and others kept in a large aviary for the purpose of procuring the eggs. The plan of placing these in the nests of grey hens, subsequently pursued by Mr. Guthrie, proved eminently successful. The birds have steadily increased of late years, and now 'all the old woods about Taymouth Castle are full of capercaillie, such as Drummond Hill, Kenmore Hill, Croftmorraig Hill, &c. Several migrate every season down to Strath Tay, Blair Athol, Dunkeld and the woods about Crieff;' so that the truly noble enterprise originally undertaken by Lord Breadalbane has been crowned with perfect success, and the king of the game birds may now be said to be restored to his hereditary dominions."—Page 221.

*The Arctic Ocean.**

"My brother Harry having embarked with Sir John Franklin, in 1845, it need not be wondered at, that, as year after year wore on, and still there came no intelligence, I, as well as the rest of my family, began to feel anxiety. I incidentally heard of Mr. William Penney,

* 'An Arctic Voyage to Baffins Bay and Lancaster Sound, in Search of Friends with Sir John Franklin.' By Robert Anstruther Goodsir, late President of the Royal Medical Society of Edinburgh. London: Van Voorst, 1850.

master of the Advice, of his enterprising character and energetic disposition ———. I offered my services, and a few days afterwards sailed with Mr. Penney, from whom, during the whole voyage, I met with unremitting kindness and attention.”—Preface, p. v.

Thus writes Mr. Goodsir, explaining, in a brief but lucid manner, the object and origin of the voyage: on such a subject the author need not express the hope “that the feelings will be taken into consideration, which led one brother to search for another; nay, for many brothers; for surely every one of our fellow-countrymen will welcome back as brothers each and all of the long missing ones.” It is impossible that any one should fail to participate in, and fully to appreciate, the author’s feelings and motives in undertaking such a voyage: every one must admit them to have been most natural, most unselfish, and most noble: but two matters connected with the voyage, do not seem equally clear or equally capable of satisfactory explanation. *First*, we would ask, what did the author expect to learn on board a whaler, that neither deviated, nor was authorized to deviate, from her usual course? and, *Secondly*, why does the author publicly record a want of success, which was an essential and integral part of the expedition, and was as certain and inevitable when he sailed from Stromness on the 17th of March, 1849, as when he landed at Aberdeen, quoting the illustrious B. Simmons, on a day at present unrecorded.

We cannot for a moment imagine that Mr. Goodsir supposes he is making any additions to our knowledge of the whale fishery: he has read Beale and Scoresby, and must know that this is not the case: he must, indeed, be imbued with an inordinate love of authorcraft to have made this adventure on the world of literature. But we cannot help *thinking*, and know not why we should refrain from *saying*, that he has mistaken his vocation.

The following passages are selected as most likely to interest the readers of the ‘Zoologist.’ We should have rejoiced to have found others equally quotable; for after all there is no way so fair towards an author as allowing him to speak for himself.

The Fulmar. “The fulmar of the north, except in size, may well be likened to the albatross of the south. Their habits and peculiarities are always the same. They are strong and graceful on the wing, flying almost in the teeth of the strongest gale, without any seeming movement of their beautifully rounded pinions: now swooping along in the troughs of the sea, now skimming on the snowy crests. They are almost constantly on the wing, night and day, never alighting on

the water, except during calm and moderate weather, and then but rarely. They are very bold, flying close to the side of the ship, almost within reach of the hand. I have more than once been startled in the evenings, by one flitting close past my face, with noiseless wing, like some gigantic moth.

“At the beginning of the season, before they are gorged with blubber, and their flesh has become rank and oily, they are occasionally killed for food, and taste not unlike an ill-fed chicken. They are constantly on the look out, keeping a vigilant eye on the wake of the vessel for anything that may be thrown overboard. They are sometimes, too, like the albatross, caught by a baited hook; but generally, the Davis Strait's sailor has a kindly feeling for the harmless ‘Mollys;’* and many a reproof, strengthened generally by a not very gentle oath, have I heard the ‘green Orkney boys’ get for molesting them during ‘flensing’ or ‘making off.’ For it is then that they can be best seen, and their habits particularly noted. Though, previously, but a very few may be in sight, immediately upon a ‘fish’ being struck, they begin to assemble, and are soon seen hovering over the ‘fast-boats’ in countless flocks, and alighting to feed upon the broad pellicle of oil and blood, which forms a wake after the wounded whale. During ‘flensing,’ their boldness and impudence are often very amusing. I have seen them get on the fish, and tear at the blubber, even amongst the men's long knives, and under their very feet: and more than once, I have seen one which was roughly laid hold of, and pitched out of the way, with a hearty shake, coolly return again to his repast. During ‘making-off,’ or the process of finally packing the blubber into the casks, when all the refuse parts, or ‘krang’ are cut off and thrown overboard, they are seen sitting in the water, in all directions, tearing at the floating pieces. They are exceedingly pugnacious, and are constantly driving one another away from any piece that may appear more tempting than another. The noise they make at such times is sometimes almost deafening, and exactly resembles that of poultry, something between the cackle of the hen and the quack of the duck, whilst the ‘ploutering’ in the water adds to the hubbub. Hovering overhead, but never deigning to soil its snowy plumage in the greasy water, an ivory gull (*Larus eburneus*), may occasionally be seen, stooping down to a piece of ‘krang,’ which none of the fulmars may

* “The sailors have a strange saying that the ‘Mollys’ are animated by the spirits of ‘Old Greenland Skippers;’ I suppose the fondness of both for blubber has led Jack to think this.”

happen to be touching, pecking at it whilst fluttering over it. The fulmars, when able to eat no more, make the best of their way to the nearest ice, where, squatting flat upon it, they sleep until ready for another gorge. The ivory gull, also, when satisfied, makes its way to the ice, to rest and sleep, but takes up its position on the topmost pinnacle of the nearest hammock, when it can only be distinguished by its black legs and bill. The fulmar, graceful as it is on the wing, is the very reverse on its legs; its walk is awkward and feeble."—Page 6.

King Duck. "Whilst passing over the Bank we saw immense flocks of ducks, principally the king duck (*Somateria spectabilis*). They were literally covering the water in myriads, but were so wild, that we could not get within shot of them."—Page 20.

Time of Breeding and Period of Gestation of the Otter.—There seems to be some considerable discrepancy in accounts of the otter as to the period of the year in which they produce their young. Mr. Bell says "March or April." Mr. Jenyns, "March;" and in the 'Zoologist' (Zool. 1901), the pair kept in the Gardens of the Zoological Society (where, however, the male had been but recently introduced), are recorded as breeding in August. Probably it is more irregular in this than most animals, as I have just seen three young ones, taken at Rawworth, probably from their size (about eighteen or nineteen inches long) six weeks or two months old, and therefore born in November. Perhaps some other of your correspondents can give us additional information on the subject. Is it probable that the female has two broods in a year?—*H. T. Frere; Blofield, January 9, 1851.*

Period of Gestation and Number of Young in the Guinea-pig.—It is strange that no one has yet called attention to the assertion repeated by the two authors mentioned above, and by every writer on Natural History, with whose works I am acquainted, as to the number of young produced by the guinea-pig. They talk about its having from four to twelve in a litter. As far as my experience goes (and in my younger days I have often kept them) this is much too high an estimate. I never remember a litter of more than five, and much more frequently two, three, or four; often only one. Its time of gestation, too, is put down by Mr. Bell as from twenty-five to thirty days; it ought to have been six weeks. Now, when such errors, for such I say without question they are, are countenanced by such men, and this in the history of an animal, for learning whose habits we have every opportunity, how great are those likely to be which are committed by less learned men in matters more difficult to be examined. Mr. Bell very properly derides the idea that this animal drives away rats. The fact is, that they seem to have a peculiar attraction for them; and I remember a case where I got some to keep rats out of the rabbit-hutches, and the guinea-pigs were half eaten by the morning, by the very vermin I had got them to repel, and heartily laughed at I was for my cleverness.—*Id.*

White Hedgehog.—On the 19th of October, 1850, I obtained a specimen of this animal, the spines of which were entirely white: it was brought to me by a rat-catcher, who found it in the parish of St. Faith's, near Norwich. On dissection, I found the

nerves in connexion with the muscles for the contraction of the skin, to be greatly diseased. Query, did not this account for the loss of colour in the spines?—*J. O. Harper ; Norwich, December 4, 1850.*

Notes on Observations in Natural History during a Tour in Norway.

By the REV. ALFRED CHARLES SMITH, M.A.

(Continued from page 2982).

THE Summer Snipe (*Totanus hypoleucos*). One of the commonest species of birds to be seen in Norway during the summer months, is the summer snipe: you may see them by every mountain stream, on the banks of every inland lake, and even on the shores of the fjords. If wandering quietly by the water-side, I was sure to have an opportunity of watching their elegant motion, unobserved: now they are running on the soft sand, over which the rippling water has just strength left to curl, jerking their tails up and down, and stretching out their necks: now they are standing on some inland stone, motionless and quiet: now as your advancing form meets their eyes, away they skim over the water, their short wings outstretched, and uttering their peculiar note. I once fell in with the young of this bird in some numbers: I had been visiting the beautiful waterfall of Høne-fos, and, hearing that some miles higher up the river made two still greater plunges, had followed its course through a glorious forest, the tremendous roar of the river, as it dashed down the fall, and the clouds of spray which rose far above the trees, giving unmistakeable proofs that I had not been deceived. After watching the rushing, boiling, foaming water, as it was hurled into the abyss below, till my eyes ached, and I was half stunned with the noise, I followed the course of the river higher up for some distance: here the river was broad, deep, clear and quiet, flowing calmly on through the silent forest, as if collecting its strength and preparing for the toil and turmoil into which it must soon be dashed: the contrast, indeed, was great; and so refreshing and inviting did it look, that I threw down my gun, and was soon swimming about in the clear water; but though the day was very hot, and the sun had great power, the water was so intensely cold, that I was quickly on the bank again. I had noticed the great numbers of summer snipes, which were flitting across the river and uttering their piping notes from both banks, and I had been a good deal surprised to see them sometimes extending their flight in amongst the trees, and now and then even perching on the tops of the young larches. Whilst

bathing I disturbed two from the bank, and from their frequent return to the same place, their peculiar cry, and strange antics to decoy me away from the spot, I felt sure that they had nests or young in the tufts of long grass which abounded; nor was I mistaken. After a diligent search for some time, I found two young birds covered with down, of a brownish hue above and white below: so motionless were they, and so well in colour did they assimilate to the heather and long grass around, that I might well have passed them over many times, when searching in the very spot where they were. Presently I found two more, in another part of the river-bank; and soon after a low chirping attracted me to another spot, where I found two others: in all I found about ten, on various parts of the bank, but never more than two in one spot, which was strange, as it is well known that the summer snipe lays four eggs. As some of these little birds could scarcely hobble over the heather (which they invariably did as fast as they could, when I put them down and restored to them their liberty), and as they appeared to be just hatched from the egg, I hoped to find a nest, and long and diligently did I search for one: but though I looked in all the most likely spots, among the stumps of grass in the boggy soil; amidst the heath on the river-bank, and the pebbles on the shore; amongst the tangled grass and the bunches of reeds below the little fir-trees and bushes; though I frequently got wet in my earnest search, and once sank into the black boggy mud; I could find neither the eggs, nor the nest with the broken egg-shells, from which the young I had just before found, must have come: and yet as some of these young birds were but just hatched, and could scarcely crawl over the rough grass, their cradle must have been very near to me. I cannot close this account of the young of the summer snipe, without remarking on the extreme accuracy of the figure of it, as given by Mr. Yarrell in his most valuable work, in the vignette at the end of the description of this bird.

The Hooded Crow (*Corvus cornix*). As the summer snipe, last described, abounds more than any other bird on the banks of every stream and lake; so the hooded crow may be seen in vast numbers throughout the valleys and marshes in Norway: indeed, this bird is the great representative of the genus *Corvus* in that country, as the rook is in this; and frequently have I seen a hundred and more of these birds wandering over the short grass of a newly-mown meadow, and digging their beaks into the ground for worms and slugs. I never saw a rook or a carrion crow in Norway, and only once did I see the jackdaw, but the hooded or royston crow is numerous enough to sup-

ply the place of them all, and a handsome bird he is. In some parts of the country, and especially in the neighbourhood of Christiania, in lieu of the light smoke-gray, which is the usual colour of their backs and under surface, a light rose-coloured tint pervaded these parts: I have seen a large flock with this rosy colour, and when the sun has happened to shine on their backs, the delicate pink has been very perceptible and beautiful, though I can assure your readers that this effect is not to be ascribed altogether to the agency of ῥοδόδακτυλος 'Ηώς, for even on a cloudy day the same tint remained.

The Raven (*Corvus corax*). The high table-land, which, on reaching the plateau of a mountain, you have to cross, and which frequently extends for many miles, the very acmé of all that is wild, solitary and desolate, comprises the famous Norwegian fjeld: too cold and inhospitable for habitation, and too barren for cultivation, the fjeld only serves, in its best and most fertile parts, to give a scanty subsistence to the few cows which the farmer sends there during the summer months. These fjelds present every variety of savage wildness; some are nearly flat, others undulating; others again exceedingly steep, and difficult to traverse; some are covered with heather, some with lichen and reindeer-moss; some, devoid of any vegetation, are mere wildernesses of dark rock, or enormous beds of snow which never melts. I think I never crossed one of these fjelds without seeing a raven perched on a rock, overlooking his wild domain, and croaking out his welcome, or, perhaps, his malediction, and then, as you draw nearer, flying heavily and surlily away; for the raven is a bird of great dignity, and will not brook familiarity or too great intimacy. Very often, on winding round a rock, we would come suddenly upon five or six of these birds, probably the whole family, sitting quietly together, not dreaming of an intruder on their privacy; and then what a hubbub they made, and what a bustle they were in, to get away; and what a rustling of huge black wings, and what a croaking of hoarse angry voices, as they rushed away helter-skelter, and never stopped till they had placed the greater part of an English mile between us, when we could see them settle together again on a projecting rock, to recover their fright, and examine us who where the causes of it. I have often in England admired the caution and great wariness of the raven, and having lived some years near the Cheddar Cliffs, where some were always to be seen, had frequent opportunities of remarking their wide-awake propensities, and have always thought it as unlikely to 'catch a raven asleep' as a weasel: but in these desolate Norwegian fjelds, where a human being is so seldom seen, not even a raven thinks it worth while

to be always on the look-out, on so remote a chance, and so we often caught them napping, or something very like it. I believe the raven is one of the very few birds which never changes the colour of his dress, in the icy winters of these northern countries.

The Ring Ouzel (*Turdus torquatus*). The ring ouzel is by no means an uncommon bird in Norway; he delights in the copses of low bushes, which clothe the sloping sides of the mountains near their base, and when these copses extend down to the margin of a lake the ring ouzel seems to me to have all he delights in: at any rate it is in such a locality that I have most frequently seen them. The ring ouzel, too, is a tamer bird in Norway than he is described to be with us, though being only a summer visitant there, he must be pretty well acquainted with man, and his tyranny over, or rather persecution of, the feathered race. I had a great opportunity of admiring the ring ouzel, and his fearlessness, when staying a few days near Skjolden, not far from the foot of the highest mountain in Norway, the Skagstøls-Tind, whose peaks rise about 8000 feet above the level of the fjord below. Many times in the course of the day a ring ouzel would, in passing to and from his nest, rest for a few minutes on the turf-roof of an adjacent chalet: here he would perch and turn his head round in his peculiar manner, and sing a small stave, and away again on his labour of love.

The Common Dipper (*Cinclus aquaticus*). A very great favourite of mine is the common dipper or water ouzel: he chooses such a delightful place for his residence, generally in the midst of splendid scenery, and always amongst the rocks and banks of a rushing, roaring torrent, or a clear, babbling mountain stream: the noise of the water as it hurries over its rocky bed is the sweetest music to him. I agree with him in this, and I can sit at the foot of a large water-fall, such as one sees in Norway, and gaze for hours at the leaping water, as it foams over the edge and plunges down, and listen to its perpetual roar and bellowing as it dashes on the rocks below: but the water ouzel must have more than this; he can never be happy, unless the sound of his native torrent is constantly heard: he never leaves it: let it wind about as it may, he will follow its meandering course, now up the stream, now down, but always near the water; or he will sit on a stone in the middle of the brook, and the water will splash around him, and he will sing his melodious little song in the gladness of his heart. As Norway is nowhere level, but divided into mountains and narrow valleys, and as every valley has its clear mountain torrent, such as the dipper loves, of course I saw them very frequently, and in great

numbers. In many respects the dipper is very like the common wren, especially when he flirts his tail up and down, and his nest, too, is very similar. I once saw a pair of water ouzels going backwards and forwards to their nest, which was situated in a strange place; it was in the Canton Appenzell, in Switzerland, at the foot of the famous Eben Alp, and where the torrent, in three successive leaps, falls some hundred feet from its feeder, the deep little lake of See-Alp, said to be unfathomable: behind one of these falls, where the stream shot out from the face of the rock, the water ouzels had made their nest; they were very busy supplying their young ones with food when I was there, and so I saw them going and returning many times; flying to the side of the great fall, and then darting in behind the descending sheet of water: what a strange place for a cradle, and how difficult it must have been for the young ones to leave their nest for the first time: the body of water was so great, and the fall so high, that had they fluttered into it, they must have been dashed to death against the rocks; but no doubt the old birds knew how to guide them safely away.

ALFRED CHARLES SMITH.

Old Park, Devizes,
January 2, 1851.

(To be continued).

Remarkable Bird's Nest.—The nest mentioned in the 'Zoologist' (Zool. 2967) by your correspondent, the Rev. Mr. Amherst, is undoubtedly that of the lesser redpole. I have frequently found its beautiful little nest in a situation exactly similar to that described by him, and sometimes as smoothly lined with the pure white catkins of the willow, as a box of jewels with the finest cotton wool. There is no other small English bird, except the chaffinch, which chooses a similar situation for its nest, and no other bird besides, except the gold-crested wren, which makes so small a nest. The eggs are sometimes so blue as to retain much of the colour after they are blown.—*W. C. Hewitson; Oatlands, January, 1851.*

Occurrence of the Golden Eagle (*Aquila chrysaetos*) *in Herefordshire.*—Thinking you may not happen to hear of the occurrence of the golden eagle in Herefordshire, I copy the following notice from the 'Worcester Journal.' "A few days ago a large eagle, quite a *rara avis* in this part of the country, was taken in a trap, near the mansion of J. Arkwright, Esq., of Hampton Court, Herefordshire, by one of the under-keepers. Its wings, when expanded, measure seven feet from tip to tip. It is said to be of the golden species."—*W. H. Cordeaux; Canterbury, January 8, 1851.*

Occurrence of the Goshawk (*Falco palumbarius*) *in Norfolk.*—A specimen of the goshawk, apparently a female of the present year, was shot last week, a few miles

from Norwich. A second specimen was seen in company with it, but was not obtained : the one which was killed was shot whilst preying on a hare.—*J. H. Gurney ; Easton, Norfolk, November 20, 1850.*

Occurrence of the Gyrfalcon (Falco Gyrfalco) in Norfolk.—Whilst shooting at Frimlingham, on the coast of Norfolk, on the 17th ult., several gentlemen and myself, saw a gyrfalcon. He must have been an old bird, as he seemed to us to be almost of a snowy whiteness. This is the second that has been seen in the neighbourhood within the last three years ; the other was killed at Beeston, on the 24th of February, 1848, and is now in the possession of Mr. J. Gurney Hoare, of Hampstead. A few days after we had seen the gyrfalcon, two ospreys were seen at Frimlingham, one of which, a very fine bird of this year, was shot, and is now in my possession.—*T. Fowell Buxton ; Truman's Brewery, Brick Lane, November 19, 1850.*

Falcons hiding their Prey.—I do not know whether it be a general, or if so, a well-known habit of the falcons to hide their prey ; if not, my remarks may, perhaps, be in some measure interesting to ornithologists. I have a young kestrel (*Falco tinnunculus*), which, when not out in the air, I frequently allow a perch in my own room, where he is sometimes very amusing. Having, about a month since, given him a mouse, he did not eat it all as I expected, but after killing it and eating the head, began to carry the body about the room, and in a few minutes hid it very carefully under one of the window-curtains, which hung down to the floor ; he then left it, and I took him up and set him on his perch ; when in order to satisfy myself as to the cause which induced him to leave his breakfast, I offered him a small piece of meat (his usual food), but he would not take it. He remained tolerably quiet for about two hours, when he suddenly became restless, and looking across the room flew to the curtain and putting his head underneath drew forth his store and ate it. A few days after this he killed and hid another mouse in the same place, and, when he felt inclined, found it, eat the head and hid the body as before : I have no doubt he would have finished this also, had he been allowed, but I then turned him out, and when he was again admitted, it was too dusk for him to find it. I have had no opportunity of making subsequent observations, but should these be of any value, it will be a source of pleasure to me.—*T. S. Carte ; Sidney College, Cambridge, December 16, 1850.*

The Lanner.—I have lately procured the bird mentioned in the notice (which I enclose) extracted from the 'Bedford Times.' I perceive that Mr. Yarrell considers the specimen hitherto procured and called lanner, to be young female peregrine. With regard to the bird here mentioned, Mr. Mantel, bird-preserved, Bedford, informs me it exactly answers Bewick's description of the lanner, with the exception of the mark over the eye to the back of the head being of a kind of sandy instead of white colour. He does not consider the specimen a young bird.

"Shot, near Bedford, in the neighbourhood of Hawnes, a fine specimen of that rare and valuable bird, the lanner (*Falco lunarius*). It weighed two pounds and a quarter ; near four feet in the stretch of the wings, and twenty inches length of the body. This highly-prized bird is a native of the south of Europe, and is said by Montagu to fly at the rate of one hundred and fifty miles an hour. Colonel Thornton, an expert falconer, estimates the flight of this bird in pursuit of a snipe to have been nine miles in eleven minutes, without including the frequent turnings. Anderson, in his 'Birds of America,' states that he has seen the falcon come at the report of a gun, and carry off teal not thirty yards distant from the sportsman who killed it, with a daring assurance as surprising as unexpected. The above specimen is preserved by Mr. Man-

tel, of Bedford, and is in the collection of Mr. Hervey Smith, Aspley House."—*C. Hervey Smith; Aspley House, near Woburn, December 4, 1850.*

[I have no idea that any distinct species of falcon answering to the name and description of the lanner occurs in this country.—*E. Newman.*]

Occurrence of the Common Buzzard (*Buteo vulgaris*) *at Laughton.*—I obtained a very fine old female specimen of this very uncommon bird, last month, from the above place.—*J. B. Ellman; Lewes, December 12, 1850.*

Bona fide British-killed Hawk Owl. By E. T. HIGGINS, Esq.

THE subject of the present communication was shot on the 25th or 26th of August, 1847, about two o'clock in the afternoon (the sun shining bright at the time), whilst hawking for prey on Backwell Hill, near the Yatton (Clevedon) Station, on the Bristol and Exeter Railway, and on the day following, whilst still in the flesh, came under my observation; for the genuineness of the specimen I can therefore vouch. The delay in the record of its capture has arisen from my inability to obtain the bird for description sooner, and thinking that a mere statement of its appearance, without any account of locality, &c., would be neither satisfactory nor interesting, I preferred waiting until I could give some positive information about it. Having at length had it placed in my hands for description, I hasten to bring it before your readers; and as it differs in some respects from the individuals recorded in Wilson's 'American Ornithology,' Yarrell's 'British Birds,' &c., have drawn up the following sketch.

The Hawk Owl.

Surnia Ulula. G. R. Gray's 'Genera of Birds,' p. 33.

Strix funerea. Gould's 'Birds of Europe,' pl. 45.

Strix funerea. Yarrell's 'British Birds,' vol. i. p. 139, 1st edition.

Facial disk small and incomplete, the inner feathers of each side projecting over and almost concealing base of bill and cere: nostrils large, oval, and placed obliquely at the margin of the cere: exposed portion of bill, white: lower mandible horn-colour, nearly hid by the curling upwards of bristly feathers: eyebrows projecting; irides straw-colour: feathers of facial disk dull white, terminating in dark, purplish, black points, forming a curved band, extending from above external canthus of eye to lower edge of disk, and thence continued to front of wing. Just behind the ear, is given off another, though less

distinctly marked band, passing down to point of shoulder: chin and front of throat, dusky; sides of throat nearly white, with black lines,* giving them a strigose appearance: crown and back of head black, with numerous round, white spots (each feather is furnished with three white spots on a black ground); on the nape of the neck the spots



The Hawk Owl (*Surnia funerea*).

are larger, but less regular: upper part of back and shoulders dull white, mottled with brownish black: back, sepia-brown, irregularly blotched with white: primaries and secondaries sepia-brown; the

* The black lines are due to the colour of the shafts of the feathers.

former having four or five distinct and nearly equidistant white spots on outer web, towards the tips; the latter are adorned with large, nearly square, white spots on outer web, forming two or three irregular white lines; a few of the secondaries have white spots on their inner webs; tertials long and downy, with large, white spots on their outer webs, forming, when the wing is closed, a broad, elongated band of white, with a few transverse, irregular, brownish bars: rump and upper tail-coverts umber-brown, with irregular white markings, and a broad terminal white spot: tail seven inches and a half long, projecting three inches and a quarter beyond the closed wings, cuneiform, containing twelve feathers, of which the centre pair are one inch and a half longer than the outer; upper surface sepia-brown, with nine or ten whitish bars (three upper bars concealed by upper tail-coverts), a broad terminal white band. The bars are most strongly marked on the inner webs; the white is but slightly seen on the outer webs, and only in the form of indistinct spots. The striated appearance is best seen on the under surface, where the bars form, when the tail is expanded, eight or nine crescentic bands* of dull white; when the tail is closed, they form transverse bars: under tail-coverts with broad, white, and narrow, brown bands: in front of the point of either wing is a blackish blotch, connected with the opposite by an irregular band of dull white feathers, having stripes and spots of sepia-brown; beneath this and across upper part of breast, is a broad, pale band, sparingly marked with brown: lower part of breast, belly and sides, dull white, with numerous transverse, slightly waved bars of hair-brown: legs and feet thickly covered with yellowish brown feathers, barred with dark brown: claws bluish black, long, curved and sharp; middle claw furnished with a projecting sharp inner edge. Total length 14½ inches; from point of wing to tip, 9½ inches; length of central tail feathers, 7½ inches. First quill feather shortest; third longest; fourth a little shorter; second less than fourth: feathers on under surface of wing white, with sepia-brown bands, which on some are regularly transverse, but in others the brown is placed alternately on inner and outer webs.

By comparing the above description with those of Messrs. Yarrell and Wilson, it will at once be seen how far the present specimen resembles, and in what respect it differs, from those examined by them. There are certain points on which I have been, perhaps, unnecessarily minute; but as they are points on which the above-named authors

* The convexity being towards the points of the feathers.

have but lightly touched, I may be excused for having done so, as they present such very strongly-marked characters, which, however, may not be constant, or only to be noticed in immature individuals, This is in all probability a young bird; I say "*in all probability*," because the rare birds, which have at different times been obtained in England, have, with scarcely an exception, been examples of the first or second year.

May we not from this remarkable, but well-known fact, reasonably conclude that the occurrence of these accidental visitors is to be attributed to their instincts not being sufficiently developed to enable them to retrace their way, when carried to a distance from their natural habitat by a strong current of wind.

In their general appearance, the hawk owls so closely resemble the species of *Circus*, that in the best arranged catalogues, the genus *Surnia* is placed first amongst the owls.

"This genus was established by Dumeril to embrace those species of *Strigidæ* which show a close approximation to the *Falconidæ*, not only in the habit of hawking by day, but also in form, having smaller heads, less complete facial disks, and longer tails than the other owls.* The feathered tarsi and toes, however, point out its relation to the *Strigidæ*.

The peculiarities of its appearance and habits have been so graphically described by Wilson, that I have availed myself of his account.

"This is an inhabitant of both continents, a kind of equivocal species, or rather connecting link between the hawk and owl tribes, resembling the latter in the feet, and in the radiating feathers round the eye and bill; but approaching nearer to the former in the smallness of its head, narrowness of its face, and in its length of tail. In short, it seems just such a figure as one would expect to see generated between a hawk and an owl of the same size, were it possible for them to produce, and yet is as distinct, independent and original a species as any other. It has also another strong trait of the hawk tribe in flying and preying by day, contrary to the general habit of owls. It is characterized as a bold and active species, following the fowler and carrying off his game as soon as it is shot. It is said to prey on partridges and other birds; and it is very common at Hudson's Bay, where it is called by the Indians 'coparacoch.'"

E. T. HIGGINS.

* Selby's 'Illustrations of British Ornithology.'

Anecdote of the Song Thrush.—A person named Edwards, living in this neighbourhood, found a thrush's nest with the young just ready to take flight; he caught two, but the rest escaped: the two were placed out of doors in a cage, and the old birds continued to feed them. Fourteen days afterwards, Edwards found a second nest with five young ones; one of them was killed by a cat; two others died; and the remaining two were put in the cage with the older ones, who, strange to say, being now fully able to feed themselves, actually took to feeding their young and helpless companions also, and continued to do so until they could feed themselves; when all four birds were put into separate cages. It is rather remarkable that the elder pair would never feed the younger if they thought themselves observed, so that it was necessary to conceal one's self very carefully in order to watch this proceeding.—*R. W. Hawkins; Upper Brook Street, Rugeley, Staffordshire, December, 1850.*

Occurrence of the Chiffchaff in January.—My friend Mr. Croker, of Bavry, has just brought me a specimen of the chiffchaff (*Sylvia Hippolais*), which he shot yesterday, at a farm about a mile from Torquay: the bird appears to have been in good condition, and was singing on a tree when it was shot. Perhaps it may interest some of the readers of the 'Zoologist' to know that this bird has been met with at such an unusual time of year.—*Robert Battersby; Torquay, January 11, 1851.*

Occurrence of the Black Redstart (Sylvia Tithys) at Lewes.—A female specimen of this bird was shot in a chalk-pit near this town, last month.—*J. B. Ellman; Lewes, December 12, 1850.*

Occurrence of the Black Redstart near Lewes.—On the 20th of November a hen bird of the above species was killed in a chalk-pit near this town: it is now in my possession.—*C. Potter; Lewes, December 23, 1850.*

Blackcap Warbler in Winter.—In the 'Zoologist' (Zool. 2985), there is a notice by Mr. Briggs on the occurrence of the blackcap warbler in November, which has brought to my recollection an instance still more conclusive as to the fact of its occasionally remaining here all the winter, which occurred at Duddingstone some years ago. The bird in this instance was a female, which used to come constantly to the crumbs before the dining-room window, along with the blackbirds, sparrows and titmice. I remember its coming almost daily during the months of January and February, and have little doubt that it survived till the woods and fields were green again, and it was rejoined by its relatives from the south. Mudie mentions several instances of its occurrence during winter in the southern counties of England, and there is a notice to the same effect in vol. i. of the 'Zoologist,' page 76.—*R. F. Logan; Duddingstone, near Edinburgh.*

Occurrence of the Continental Crested Lark near Penzance.—I was informed yesterday of the capture of another example of this rare lark in this neighbourhood, which is the third instance of its occurrence in the county. I examined the bird after it was mounted by Mr. Vingoe, and it corresponded with the two individuals which I reported to you some time since as having been captured between this place and Marazion.—*E. H. Rodd; Penzance, October 25, 1850.*

Anecdotes of a Raven.—When out shooting a few days since, I observed an old man apparently in conversation with some other person: on reaching him he informed me he had been talking with Mr. Crowther's raven, which was perched in an elm-tree near him, keeping crows from a wheat-field; I called to the bird by his name, Taff (which I previously knew); he immediately answered "Halloo," in a very deep and hoarse tone: this was about a mile from Mr. Crowther's house. A few days after-

wards I saw a young gentleman who resides with Mr. Crowther, and on relating the above circumstance to him, he replied, "Ah! poor fellow, he will never keep crows again." I found, on inquiry, he had been killed by a grayhound whilst indulging his propensity for biting the end of its tail: at the same time I learned the following particulars of this remarkable bird. He was very tame, having his meals with the servants, and his dessert with his master, to whom he was much attached, sitting on the sill of his bedroom-window as soon as it was light, and remaining there until he got up: if he went from home, Taff would go part of the way with him, and meet him on his return, watching in a tree for hours; and on seeing him, would fly and perch either on the horse's head or his master's shoulder. He was of great use, and took great delight in coursing, frequently turning a hare by his swoop. He was very mischievous, hiding anything he could get, especially glittering things: on one occasion he took from the above-mentioned young gentleman's dressing-table, seventeen shillings; and the thief might for ever have remained undetected, had he not seen Taff flying away with a shilling in his mouth. He had a great dislike to children, attacking them whenever they came near him. His roosting-place was a high tree near the house, and he frequently alarmed persons passing underneath, by some unearthly ejaculation.—*Hubert Beadles; Broadway, Worcestershire, December 16, 1850.*

Gray variety of the Rook (Corvus frugilegus).—A curious variety of this bird was killed in Northamptonshire: it appears to be a very old bird: it is gray on the back and wings; the back is much darker than the wings, and the tail is grayish; all the rest is quite black.—*L. H. Irby; Poringland, near Norwich, January 13, 1851.*

Golden Oriole nesting near Deal.—A few days since, when at Sandwich, a person there who partly gains his living by bird-stuffing, told me that ten years ago the golden oriole bred in Word Wood (a small wood on the border of the marshes, very boggy in winter, with very luxuriant Carices and tall herbage); that he saw an old one but would not shoot it, hoping to find the nest, for which he ineffectually searched. On making a second visit to the spot, a few days after, he was told by a countryman that he had found a nest with young ones, which he had given to his ferrets; and from the description of the nest, he had no doubt it was that of the golden oriole.—*J. W. Hulke; Deal, January 8, 1851.*

Note on the Figure of the Hairy Woodpecker (Picus villosus).—Will you allow me to offer one or two remarks upon the clever and nearly correct sketch of the hairy woodpecker in the 'Zoologist' (Zool. 2986)? Is there not an inaccuracy about the form and shape of the bill? It appears, in the drawing, to be slender, sharply pointed, and slightly curved, greatly resembling the bill of the common creeper (*Certhia familiaris*), whereas *P. villosus* (or at least the only specimen I have seen), like all true woodpeckers, has the bill straight, strong, conical or wedge-shaped, very broad at the base, with the extreme point squared off. I would also observe that, in the cut, the bird appears to have but one hind toe; whereas it really has two, being a four-toed species. May I add, that I think it would have been desirable that the artist should have shown the fringe of hair-like feathers which grow down the centre of the back, and which give the bird his name (*Pic chéveli*; Buffon)? I trust that neither yourself nor the gentleman who has so kindly contributed the sketch, will consider me hypercritical or needlessly minute, in the remarks I have ventured to make upon it. *P. villosus* is now, for the first time, established as an undoubted English visitor, and it is highly desirable that the first impressions which your ornithological readers may form of the stranger, should be most accurate; and the pretty woodcut, coming with the stamp of

your valuable approbation, as "characteristic," might perhaps mislead. It is the more necessary to be correct in the particulars I have noticed, because some species of the Picidæ, both European and American, have but three toes, and an African sub-genus has the bill curved. There is an accurately drawn and coloured representation of this woodpecker in Lewin's 'British Birds.'—*W. F. W. Bird* ; 5, *King's Road, Bedford Row, January 4, 1851.*

Occurrence of the Wood Sandpiper (Totanus glareola) at Yarmouth.—Two specimens of this sandpiper, male and female, were killed at Yarmouth, on the 2nd of August last, and are now in my possession.—*L. H. Irby* ; *Poringland, near Norwich, January 13, 1850.*

Occurrence of Baillon's Crake (Crex Baillonii) near Deal.—In the latter part of October last, my friend Mr. C. A. Delmar, obtained a second specimen of Baillon's crake, not far from the spot where he procured one in the September previous. It is now in my possession.—*J. W. Hulke* ; *Deal, January 15, 1851.*

Occurrence of the White Stork (Ciconia alba) in Scotland.—Happening to notice that our leading and most recent writers on Ornithology, such as Yarrell, Jardine, &c., speak only of one example of the white, or common stork, as having hitherto been met with in Scotland, perhaps you will allow me to mention that, in the stormy and unusually severe season of 1837-38, a specimen of this bird was killed in a swampy moss in the parish of Lonmay, and at no great distance from the loch of Strathbeg, an extensive sheet of fresh water, lying near to the sea-shore, about half-way between the towns of Peterhead and Fraserburgh, in this county. It had evidently been driven by stress of weather from the opposite continent, while in the course of its vernal migration. It attracted the notice of the neighbourhood ; but no one was able to tell its name, a similar bird never having been seen in that quarter before. By the country people its legs were not unaptly compared to red Turkey leather. As there was no individual, either on the spot or in the vicinity, who was aware of its rarity, and consequently of its value as an object of science, it was nailed to the end of a barn, which, with his usual felicity, is characterized by White, of Selborne, as the "countryman's museum" (Sir W. Jardine's edit. p. 34). In this position it ministered to the gratification of the curious, till it went finally to decay. I obtained its bill, which is still in my possession, and which, beyond a doubt, identifies the bird, of which at one time it formed an important and a conspicuous portion.—*J. Smith* ; *Manse of Monquhitter, Aberdeenshire, December 17, 1850.*

Occurrence of the Red-necked Phalarope (Phalaropus hyperboreus) at Lewes.—I obtained a specimen of this bird in winter plumage last month, from a pond near this town.—*J. B. Ellman* ; *Lewes, December 12, 1850.*

Occurrence of the Red-necked Grebe (Podiceps rubicollis) in Devonshire.—A fine specimen of this bird was killed near Barnstaple, last February, and sent to me ; the man who stuffed it told me the eggs were considerable advanced.—*L. H. Irby* ; *Poringland, near Norwich, January 13, 1851.*

Occurrence of the Great Northern Diver (Colymbus glacialis) in Devonshire.—The recent gales from the north-west have driven quantities of the great northern divers on our shores, five of which have come to my hands, one among them being a mature male in full dress, having all the beautiful markings characteristic of its species.—*H. Nicholls* ; *Kingsbridge, South Devon, December 9, 1850.*

Occurrence of the Great Northern Diver (Colymbus glacialis).—A specimen of the

above bird was picked up on the top of a high ridge of the chalk downs in the parish of Beddingham, on the 20th of December. It is in the possession of Thomas Ellman, Esq., of the above parish, by whom it was found.—*C. Potter ; Lewes, December 23, 1850.*

Occurrence of the Black-throated Diver (Colymbus arcticus) at Pevensey.—I obtained an immature specimen of this bird from the above place last month.—*J. B. Ellman ; Lewes, December 12, 1850.*

Occurrence of the Little Gull (Larus minutus) at Lewes.—A very beautiful adult specimen of this bird was shot near this town about the 1st instant.—*Id.*

Occurrence of the Little Gull at Lewes.—I have a specimen of this little rarity in my possession, which was shot in the Levels, two miles to the south of Lewes, on the 29th of November. It was flying in a north-easterly direction, unaccompanied by any other, and was supposed to be a tern by the person who shot it, until, getting it in his hand, he was convinced to the contrary by the size and colour of the legs and feet. I should suppose the bird in adult winter plumage ; on which I solicit your opinion from the enclosed drawing by a lady of my acquaintance. You will perceive both mandibles are broken, which was done in shooting.—*C. Potter ; Lewes, December 23, 1850.*

[I think the drawing represents an adult bird.—*E. Newman.*]

Rare Birds at Bishop Auckland.—In the last week of June, a fine specimen of the black tern was got on the "Batts," near to this place, which is about twenty-one miles from the coast in a direct line. In the same week a gray phalarope was shot on the Tees. About the 3rd of June another spotted sandpiper was shot, which we think justifies the insertion of such as British birds ; for it is not unlikely that many which have been considered as occasional visitors are regular migrants, but may not be observed ; or even if taken, not known ; or if known, not recorded : the person who shot the bird did not know what it was, and had it not come into hands that did, we might not have known that the spotted sandpiper had been got for three successive years. About three weeks ago a female red-backed shrike was got, near Barnard Castle. In the spring of 1842, a fine specimen of the kite was shot by Mr. John Robson, keeper to R. D. Shaftoe, Esq., of Whitworth, near this place ; and up to the year 1843, a pair of peregrine falcons had bred for nine successive years in one of the mountain gorges, called Shawberry Crag, a few miles west from here ; but in the above-named year the female was shot on the nest : the following year, a pair again began the work of incubation in the same place, the male no doubt having found another mate, which soon shared the same fate : the male remained a few days and then disappeared for nearly a fortnight, when he again returned with another female ; when, I am sorry to say, both noble birds perished by the hand of the same unrelenting individual : since that time no more noble peregrines have been seen hunting in concert, as they were wont to do, the moor cock, the curlew, or the plover ; but for the last three years, the very same place has been occupied by much less interesting, yet equally as useful birds, namely, a pair of ravens, who have reared their broods each year in safety, notwithstanding many means have been tried for their capture. In the spring of 1846, a pair of very fine gyrfalcons were got at Wemer Gill, in Northumberland, and are now in my possession : in the same year a king duck was got at Bedlington, in Northumberland, on the north bank of the Tyne : in the early part of August, same year, and near the same place, an immature, small bustard was shot,

and is now in the possession of Mr. H. Cornal, of this town. On the 17th of August last, when going up to the moors, I observed six crossbills, two old and four young birds, evidently a brood of this season, near to Hopyland Castle, about a mile and a half west of where I saw them last year. A watcher informed me he had found two crossbill-nests this year, near the grove, belonging to R. Surtees, Esq., but I could gather no particulars from him about the nest or eggs worthy of note; but his description of the bird proved to me that he knew them, for he described them accurately, and he has promised me a nest with eggs if possible next year: at present, in the grove, and also in the shull plantations, belonging to Jonathan Backhouse, Esq., may be seen, almost every day, flocks of from thirty to forty.—*J. Duff; Bishop Auckland, December 16, 1850.*

Proceedings of the Zoological Society.

Evening Meeting, December 10.—PROFESSOR OWEN, F.R.S., Vice-President, in the chair.

Mr. Westwood read a paper on the Dipterous insects of Africa, known under the names of the Tsetse and Zimb. After noticing the different modes of attack of insects upon horses and oxen, together with the effects thereby produced, a new species from the neighbourhood of the new lake was described, under the name of *Glossina morsitans*, which had been observed by Capt. F. Vardon to attack horses, occasionally causing their death. Mr. Westwood also referred to the description of the Zimb given by Bruce, and considered that that writer had united in one account, the attacks of the Tsetse and those of the species of *Cæstrus*, which infest the camel, rhinoceros, &c. Descriptions were added of two additional species of *Glossina* from Western Africa, as well as a new and remarkable allied genus from Sierra Leone.

Mr. Gould exhibited and described a new form in birds, obtained from the interior of Africa, by Masfield Parkyns, Esq. *Balæniceps rex* is a stork with a perfectly anomalous beak of immense power, somewhat resembling that of *Cancroma*; but of a stature which nearly equals that of the marabou and adjutant.

The Secretary read a note by Capt. Hardy, communicated by Lieut.-Col. Sykes, on a curious native superstition relating to *Buceros ginginianus*.

Professor E. Forbes, F.R.S., read a paper on the 'Marine Mollusca collected by Capt. Kellett, R.N. and Lieut. Wood, R.N., during the Surveying Voyage of M.H.SS. *Herald* and *Pandora*.' The collection consists of 317 species of marine gasteropoda, one cephalopod, and fifty-eight marine bivalves. They were procured chiefly on the coast of Southern California, from San Diego to Magdalena, from the shores of Mazatlan and from the Sandwich Islands. Some very interesting and remarkable shells were found; the genera of which species are most numerous in the collection are *Murex*, *Purpura*, *Trochus*, *Terebra*, *Strombus*, *Conus*, *Collumbella*, *Littorina*, *Oliva*, *Cypræa*, *Natica*, *Patella* and *Chiton*; *Venus* and *Arca*. Among the more local genera are *Monoceros*, *Pseudoliva*, *Cyrtulus*, *Saxidomus* and *Crassatella*. In this paper the new Gasteropods were described: they are three species of *Purpura*, one of them representing remarkably the *P. capillus* of the Atlantic; one *Fusus* (F. Kelletti, a very

singular shell); four Nassæ; one Natica and three Trochi. A new Pseudoliva is a very fine species, and throws fresh light on that obscure genus.

Mr. Bartlett exhibited a considerable series of specimens of the genus *Apteryx*, including the original specimen figured by Shaw, which was obligingly lent by the Earl of Derby. The result of Mr. Bartlett's investigations goes to prove, that the specimen in the possession of Lord Derby was unique until the arrival of Mr. Mantell's specimen from Dusky Bay. The bird which has hitherto been considered to be *Apteryx Australis* is in reality distinct, and consequently without a name. Mr. Bartlett therefore proposed to give it the name of *Apteryx Mantelli*.

Several new Entomostraca were described by Dr. Baird; and Mr. A. Adams communicated monographs on *Scutella* and *Trichotropis*.

Monthly General Meeting, January 2, 1851.—W. YARRELL, Esq., V. P., in the chair.

Lancelot Dent, Esq. and James Crowdy, Esq., were elected Fellows. Edward W. Cox, Esq., Mansfield Parkyns, Esq. and W. Hartree, Esq., were proposed as candidates for the Fellowship.

The Report of the Council stated that the number of elections during 1850 (was nearly double the average of the four years immediately preceding it: and that the total number of visitors to the Gardens amounted to 360,402, exceeding the most successful year hitherto known (1831) by nearly 100,000. Upwards of fifty species of animals, which had not been previously exhibited, have been added to the collection, and among them three of the most singular and interesting in existence, namely, the hippopotamus, the wart-hog and the thylacine. Many new names have been added to the list of donors; and the prospect of additions during the ensuing season, both from this source and by purchase, are of the most promising character. The First Part of the Fourth Volume of the 'Transactions' has been published, and a second, containing the anatomy of the rhinoceros, by Professor Owen, and other important papers, is in the press.

The income of the Society during 1850, exhibits an increase of £6186 over that of the preceding year.—*D. W. M.*

Proceedings of the Entomological Society.

January 6, 1851.—G. R. WATERHOUSE, Esq., President in the chair.

The following donations were announced, and thanks ordered to be given to the donors: The 'Zoologist' for January; presented by the Editor. The 'Journal of the Royal Agricultural Society of England,' vol. xi. part 2; presented by the Society. 'Annales de la Société Linnéenne de Lyon,' 1847-9; presented by the Society. 'Mémoires de l'Académie des Sciences, Belles-Lettres et Arts, de Lyon;' 'Classe des Lettres,' tom. i. et ii.; 'Classe des Sciences,' tom. i. et ii.; presented by the Society. 'Annales des Sciences Naturelles d'Agriculture et d'Industrie de Lyon,' tome xi. 1848, 1849 and 1850; presented by the Society. 'List of the Specimens of British Animals

in the collection of the British Museum ; Part v. *Lepidoptera*, by J. F. Stephens, Esq.' ; presented by the Author. Six specimens of *Pterostichus oblongo-punctatus* ; presented by the Rev. C. Kuper, from Trellich, Monmouthshire. Specimens of the rare *Formica cunicularia*, male ; *Mononyx Pseudacori*, and *Vespa Crabro*, male and female ; presented by F. Smith, Esq.

T. A. Preston, Esq., of Brampton Place, Bexley, was balloted for and elected a Subscriber.

Mr. Douglas, on the part of Mr. Allis, exhibited a specimen of the rare Neuropterous insect *Drepanipteryx phalænoides*, taken by him at Bowness.

Mr. S. Stevens exhibited some fine specimens of *Dynastes Jupiter* or *Neptunus*, from Columbia ; also a foreign *Bombyx*, with the case of the larva of a *Tinea*? attached to its head.

Mr. Douglas observed, in reference to the note of Mr. Jordan, read at the last meeting, that on looking at some dry flowers of *Origanum*, which he had gathered in October, near Dartford Heath, he found that two of the withered calyces, or rather combination of calyces, for two or three were joined together, were removed by their insect tenants from the bulk of the plant, and attached to the cage in which they were placed. Since then, Mr. Stainton and he had gathered some withered flowers of *Origanum* with living larvæ in them, one of which Mr. Stainton exhibited to the meeting.

Dr. Wallich read a translation which he had made from the Danish at the request of William Spence, Esq., V.P., of the elaborate memoir of J. C. Schiödte, entitled 'Specimen Faunæ Subterraneæ,' of which the following is an epitome.

In 1768, was discovered that singular blind reptile *Proteus anguinus* in the caves of Krain, and occasionally found since in the Magdalene cave, near Adelsberg, in Illyria. In 1840, Koch published a figure of a Crustacean, of the family of *Oniscus*, *Pherusa alba*, discovered in the cave of Adelsberg ; and four years later was found in the Lueger cave, an insect of the Coleopterous family *Carabidæ*, *Anophthalmus Schmidti*. It was not only their locality which attracted attention to these animals, though it was striking enough that animals should be found existing under conditions so unfavourable to animal life ; but the fact that they had no eyes, organs so well developed in all other members of the respective groups to which they belong. In the *Proteus*, indeed, the eyes if not altogether wanting, are yet so little developed, that beyond the mere perception of light, they must be incapable of receiving impressions of images. It is very easy to perceive the connexion that exists between the want of light in the caves and the want of visual organs in their inhabitants. So long as only one form of animal was known to exist there, inhabiting, moreover, a running stream and not, therefore, exclusively doomed to darkness, this blindness was viewed as an exceptional phenomenon for which there were analogous instances. But on becoming acquainted with other occupants of these caves, not only blind, but in their structure belonging to peculiar forms, the idea arose that these animals stood related to each other, as links of one chain of a subterranean Fauna, whose common characteristic was blindness. On the other hand, F. Schmidt found in these caves some few animals not materially different from the usual forms. Erichson, in his 'Monography of the Staphylinidæ,' describes a new species of *Homalota*, under the name of *spelaca*, and quoted as an inhabitant of the cave at Adelsberg a species of *Carabidæ*, *Pristonychus Schreibersii*. Both these insects differ from allied species by their strikingly minute eyes.

In 1841, were found in the Mammoth cave at Kentucky, about a mile from the entrance, a fish and a Crustacean, both with eyes concealed under the skin, as in Proteus, concerning which, various communications have been made public. Telkamp notices these, and described some new Articulata and a fish in 1844.

In 1845, Schiödt examined three caves near Adelsberg and one near Trieste, in all of which he found the animals already known and several new ones. The latter were new Coleoptera ——— Silphidæ, viz. —

Bathyscia (n. g. allied to Choleva, but differing chiefly in its want of eyes), two species; and Stagobius (n. g., so peculiar in its structure that it is unlike any other of the Silphidæ, and minutely described).

A new Thysanoura, Anurophorus Stillicidii, on clusters of Byssus fulvus.

Two remarkable blind Arachnoides, each the type of a new genus, viz., Stalcta, and another not named.

A Crustacean of the family Amphipodes, (new genus) Niphargus.

The term, subterranean fauna, may with propriety be applied collectively to those animals which exclusively inhabit caves, and are expressly constructed for such localities. They may with tolerable precision be arranged under the following heads:

Shade-animals; extensive genera and species, inhabiting caverns near their entrance, and generally all cool, shady and moist localities.

Twilight-animals; they belong to widely spread genera, but are peculiar to the caves, and distinguished by their small eyes. They are principally found near the entrances to the caves, but proceed deeper into the darkness than the shade-animals.

Cave-animals; they form, at least in part, peculiar genera; are wingless and colourless, and exist exclusively in total darkness. The terrestrial division is blind; the aquatic has a perception of light.

Stalactite Cave-animals; Insects, Arachnoids and Crustacea, appertaining to peculiar genera; wingless, blind, living in total darkness, peculiar to stalactite caves; in part occupying the columns, and constructed accordingly.

The following papers were also read:

'Descriptions of Six New British Diptera,' by F. Walker, Esq.

'On the Genus Acanthosoma,' by W. S. Dallas, Esq.

'On the British Species of the Genus Gelechia' (Fifth Part), by J. W. Douglas, Esq.

'On the Genus Gracilaria,' by H. T. Stainton, Esq.

The President appointed Messrs. J. F. Stephens, W. W. Saunders, W. S. Dallas, S. J. Wilkinson, E. Shepherd and F. Smith, auditors of the Treasurer's accounts, and gave notice that the Anniversary Meeting would be held on the 27th inst.: when the Council recommended that the following gentlemen should retire from the Council, viz., Messrs. Desvignes, Parry, Spence and J. F. Stephens; and that the following should be elected in their stead, Messrs. E. Shepherd, F. Smith, S. Stevens, and S. J. Wilkinson; also that J. O. Westwood, Esq., should be President; W. Yarrell, Esq., Treasurer; and Messrs. J. W. Douglas and H. T. Stainton, Secretaries, for the year 1851.—H. T. S.

Notes on Observations in Natural History during a Tour in Norway.

By the Rev. ALFRED CHARLES SMITH, M.A.

{(Continued from page 3027).

The Snow Bunting (*Emberiza nivalis*). I met with the snow bunting on the very highest and most barren fjeld: I was shooting ptarmigan, and had slept at a sæter, or mountain farm, the preceding night and with my companion, a Norwegian officer, who was a famous mountaineer and an excellent naturalist, walked over the highest fjeld I ever crossed, from 4 A.M. to 8 P.M.: this fjeld was by far the most wild and barren I had ever seen; it was near the Horungtinderne range of mountains. Some idea of its loneliness and sterility may be formed from the fact, that during those sixteen hours which we spent in traversing it, we not only saw neither hut nor human being, but no tree, or shrub, or heath, or earth: nothing but hard, bare, barren, lichen-covered rocks, or enormous patches and fields of snow: here and there a little rein-deer moss filled the crevices of the rocks, and this was all the verdure of this wilderness of rocks and snow. Sometimes we had to plunge through the soft snow above our knees for many a weary mile; this was very fatiguing: at other times through bogs of moss and melted snow; and then, perhaps, through a wide torrent, whose waters reached to our middle. Now we had to cross a ridge of sharp rock, which stood like an island out of the snow; the sharp edges of the granite cutting into the leather of our shoes, now completely soft and sodden with the melted snow. Now we had to descend a steep snow-mountain: this was very difficult, and not without considerable danger to those unaccustomed to them. As your readers may not know what the descent of a Norwegian snow-mountain is, I will explain it. Let them imagine a very steep mountain, covered with deep never-melting snow, perhaps five or six hundred feet in height, the side presenting a bank of snow as steep as the roof of a house: to try whether the descent was practicable, we always placed a large stone on the top, gave it a gentle push, and watched its progress. If the snow was soft enough to impede its pace, and allow it to form a furrow for itself and glide gradually down, the descent was pronounced feasible: if, on the contrary, the snow was not soft enough for this, but the stone descended in successive bounds, it was pronounced too dangerous to attempt. It was quite wonderful to see the rapidity and ease with which our guide shot down these snow-

mountains, like an arrow from a bow. Placing both feet together, with nothing in his hands to steady him, but bearing our heavy provision-box and blankets at his back, down he went, his pace accelerating every second till he reached the bottom, and enveloped all the way down in a wreath of snow, which he cast off on both sides of his feet and legs, as if it had been turned up by a plough, and marking his track by a deep furrow. The captain and I followed, much more slowly, holding the barrels of our guns across us, while the butt end was plunged deep into the snow to steady us and to slacken our pace. If we leaned forward too much, we were in danger of going down, head over heels; if we leaned back too much, our feet would slip from under us, and the same result would inevitably follow, and we should have a roll of perhaps some hundred feet, without a chance of stopping till we reached the bottom; by no means pleasant, even on snow, and especially when the snow-hill ended (as was not unfrequently the case) in a rocky precipice; to roll over which must be certain death. Right glad was I to get to the bottom of these snow-mountains, and though I went down many such, it was never when by going round I could avoid them: it was in such scenery as this, and amongst these snow-mountains, that I saw the snow-bunting. I saw four of them in various parts of this fjeld, and I never saw one on any other occasion: they were all alike, in their summer plumage of black and white (this was on the 11th of July), and were all upon the snow itself, hopping and running about upon it, and then flying a short distance to another part. I never saw so much snow as on this day: indeed, as the sun was very bright, and the snow of the most pure, dazzling white (for there was no dust or earth amongst the rocks to discolour it), I was nearly blinded by it, notwithstanding a green veil that I put on: for miles and miles we had to plunge through it, and all around us it lay in larger or smaller patches, far as the eye could reach, till in the distance we saw, on one side, the rounded snow-capped summits of the mountains of Justedal and the Fille-fjeld, or, on the other, the sharp pointed rocks and needle-like peaks of the Horungtinderne range. I have entered into rather a longer and more minute account of this fjeld, because, in addition to its peculiarly wild and barren character, and the magnificent views from it, I fell in with so much to interest me as a naturalist. There were the ptarmigan of both species, *alpinus* and *subalpinus*; the snow-buntings; two herds of tame rein-deer; several ermines; some of those curious and mysterious creatures, the lemmings (of all which animals more hereafter, when I come to speak of the quadrupeds of Norway); besides the

fresh tracks of a bear (which must have crossed the snow that morning), to see which for the first time in the wild fjeld was by no means an indifferent matter.

The Pine Grosbeak (*Pyrrhula enucleator*). I procured two specimens of this bird while in Norway, a male and a female, both in excellent plumage: I was not fortunate enough to see one alive; and I learned on inquiry, that they are by no means numerous, a devoted ornithologist and a thorough field-naturalist having assured me that he had only seen the bird alive twice.

The Robin (*Erythaca rubecula*). An Englishman would soon miss this great favourite, the children's pet, and the tamest and best-beloved of all our pretty songsters: I had often looked for him in vain, and had concluded that he never penetrated so far north; and it was not till two months after my arrival in the country, that I one day heard his well-known voice, and saw his red breast, as he hopped from twig to twig. He looked so thoroughly English, that I quite hailed him as a countryman, and felt sure that he must understand English better than Norsk. I quite pitied his hard fate, and wondered whether he flew farther south, or braved the ice and snow and piercing winds of a long Scandinavian winter.

The Blue-throated Warbler (*Phœnicura suecica*). This pretty little bird, so rare in England, seems to be much more frequently seen in Norway: though arriving from southern latitudes, and bearing the appearance of an inhabitant of sunny climes, he annually visits the valleys of Norway. I did not see him there myself, but I was assured by several persons, on whose judgment I could rely, that he was by no means an uncommon visitor; and, indeed, I see it mentioned in Yarrell, that Mr. Hewitson himself saw it there. It seems very strange that a bird which is essentially a denizen of warm countries should make its appearance annually in so northern a land, whilst it is never seen in the south of Sweden or Denmark, and but very rarely in England. Possibly it may be that the climate is not unsuited to him in the summer months, as from the almost continual presence of the sun, the air is not chilled by night; and consequently in the valleys the temperature is at all times warm during summer, and very often oppressively hot: indeed, it is a very common observation, that it is hotter during summer in Norway than in Rome. From this I must entirely dissent: I have been in Rome in May, when the Corso was quite deserted, and I dared not walk down even the shady side of the street on account of the heat; but in Norway, though I often

preferred driving by night, I have never been prevented by the hot weather from travelling or shooting, or taking other exercise. I may here observe, that, though fully prepared for it, nothing seemed so strange and astonishing to me, when first I reached Norway, as the total absence of darkness or even dusk at night. In Christiania the people were walking about the streets at all hours; and during about two months, I never saw a candle, and could see plainly to read and write, during the very short period of time from the setting to the rising sun: it was literally broad daylight, without intermission, for nearly two months: for when the sun did set, it merely dipped below the horizon, and then rose again. The birds, too, seemed never to know when to go to roost; they were singing at all hours; when the sun was shining far above the horizon at 10 and 11 o'clock, P.M. They must have been puzzled; and indeed, I think, that like the Norwegians themselves, they sleep through the long and dark winters, and make the most of the short, but brilliant summers, by resting as little as possible; and then, only at such times and in such places as they happen to be, when thoroughly tired.

The Common Partridge (*Perdix cinerea*). I had thought the partridge to be so hardy a bird, as to be found in every climate; and was surprised to hear that he was a *rara avis* in Norway, and never penetrates beyond the extreme south of the country. As I was never on land in Norway, south of Christiania, and I understand the partridge never reaches higher north than the latitude of that city, of course I never saw him. I cannot comprehend that law of nature which enables a bird, as the blue-throated warbler, whose habitat is essentially a warm and southern land, and whose appearance at once bespeaks him to be delicate, to penetrate into the heart of Norway; whilst it forbids the partridge, who can brave our frequently severe winters in England, to visit beyond the extreme south of the country.

ALFRED CHARLES SMITH.

Old Park, Devizes,
February 5, 1851.

(To be continued).

Catalogue of Birds taken in Pembrokeshire, with Observations on their Habits, Manners, &c. By Mr. JAMES TRACY.*

(Continued from page 2642).

Bullfinch. Common. Bullfinches, in confinement, if fed on hempseed, soon change colour; and in two or three years become black. One kept for several years at an inn in this town was quite black, and afterwards changed again to his original colour, which was considered an ill omen, as the landlord died the same year.

Common Crossbill. A single specimen, taken near Angle, in a very exhausted state, was sent me some ten or twelve years ago, and is the only specimen I have seen.

Common Starling. Common. Arriving here in immense numbers in October, and remaining during the winter. A few pairs remain and breed here, and during the last four or five years have increased very considerably.

The Chough or Redlegged Crow. Common on our sea-coast, from Tenby to St. David's Head. They breed in holes and crevices in the cliffs, mostly in some arched, overhanging place, where they are inaccessible. I have been some years endeavouring to procure their eggs for a friend, but as yet unsuccessful: last year (1850), however, I found a nest which was accessible, and after procuring a man to get it, was again disappointed, as the eggs were hatched and the nest contained three young ones (5th June): these we took; one the man killed in bringing it up; another was hurt, and died a few days afterwards; the third is now in my possession, alive, well, very healthy, and so perfectly tame, docile and affectionate, that were both his wings good I should not be able to keep him from my head or shoulder, at home or abroad. His food consists of bits of raw and cooked meat and crumbs of bread; he will pick up a few grains of wheat, barley or oats; he also eats a great variety of small insects, particularly beetles, grasshoppers, &c. When alone, he is constantly chattering, squalling and making a variety of noises, but I have not heard him distinctly articulate any word yet, although he appears equally capable with the parrot. He is by no means averse to strangers, nor does he peck the children, but is constantly with them, and will stand to have his head

* Communicated by Viscount Emlyn.

scratched for hours. I have never seen them more than a mile or so from the sea-coast: they keep in families during the autumn and winter, until the pairing season.

Raven. Tolerably common round the sea-coast, where they breed: they also breed on some of the old castle-walls, and on Treffgarn rocks, in the upper part of this county: they are early breeders. I have a note of seeing their eggs in a nest, on the 14th of February, 1842, and of taking six from a nest on the 4th of April, the same year.

Carriion Crow. Common. These birds breed in trees, and in the cliffs round our sea-coast.

Hooded Crow. A few of these birds arrive here in the autumn, but do not remain long.

The Rook. Common. Mr. Yarrell gives a vignette of an accidental malformation in the beak of a rook, where the under mandible is elongated and curved upwards. One killed by Major Bowling, at Woodfield, near Pembroke, and presented to Viscount Emlyn, in whose collection it now is, has the upper mandible elongated and curved downward, a full inch and a quarter longer than the under one.

Jackdaw. Common.

Magpie. Common.

Jay. Common in the upper or more inland and wooded part of the county.

Green Woodpecker. Tolerably common.

Great Spotted Woodpecker. Very scarce. A specimen taken at Lawrenny, is now in the collection of R. J. Auckland, Esq., of Boulston, near Haverfordwest.

Lesser Spotted Woodpecker. Equally scarce as the last.

The Common Creeper. Common.

Wren. Common.

Hoopoe. Rare, although during a period of twenty years, I think seven have been taken in different parts of the county. A fine specimen was shot near St. David's, on the 30th of March last, and is now in the collection of H. Matthias, at Haverfordwest.

The Nuthatch. Tolerably common.

Common Cuckoo. Common. I have never found the egg of this bird in any nest but those of the meadow or tree pipits.

Yellow-billed American Cuckoo. The specimen from which Mr. Yarrell figured his bird was killed by my brother, near Stackpole Court. I first noticed it on the top of an ash-tree, in the act of feeding on some small insects on the wing, very similar to the golden-

crests ; seeing it appeared a nondescript it was shot immediately, and nothing more observed as to its habits.

Bee-eater. Very scarce. I picked up a specimen, on some high land near the sea-coast, which had not been long dead : I succeeded in skinning and setting it up, and I think it is in the collection of J. Stokes, Esq., of Cuffern.

Kingfisher. Common.

Swallow, Martin, Sand Martin and Swift. Common.

Nightjar. Common.

Wood-pigeon. Common.

Rock Dove. A few pairs breed in our cliffs on the sea-coast.

Turtle Dove. Scarce.

Pheasant. Common.

Common Partridge. As its name implies, very common.

Redlegged Partridges were attempted to be introduced by the Earl of Cawdor, on his estate at Stackpole Court, but I do not think the attempt proved successful, as I have not heard of their being noticed since that time.

Common Quail. I receive a specimen or two almost every autumn, or during the winter.

Golden Plover. Common.

The Ringed Plover. Common. A pair of these birds nested on a rabbit-warren, on a high exposed piece of ground. I took the eggs from the nest ; and in a week the female had laid her four eggs again within a few yards of the former ones : these I again took ; and in thirteen days, four more eggs were laid, very near the last nest ; but these were decidedly much smaller than the former ones. On visiting the place, about three weeks afterwards, I again found a nest containing four eggs ; but these were a great deal smaller, and had almost lost their character, as they were nearly round, and not pointed at the end, like the true type of the plovers' eggs. One, which I suspect to have been the last laid, was not larger than a robin's egg, and quite round ; clearly showing she had completely exhausted herself in her efforts to "increase and multiply." I have no doubt of their being the same pair, as there were no others seen near the place.

Gray Plover. These birds may be said to be scarce, for only in severe weather are they seen on our sea-shores ; and then they are very easily obtained, as they are by no means shy.

The Peewit, or Lapwing. Common throughout the year.

The Turnstone. Scarce. Only an occasional one taken in the autumn, and mostly the young of the year.

The Sanderling. Scarce.

Oystercatcher. Tolerably common. I have several times obtained the eggs of this bird on a small island, in the entrance to Milford Haven.

Heron. Common. Mr. Yarrell gives a list of heronries in England; to these I may add one at Linney Head, on the cliff, in company with cormorants, guillemots, &c., where from six to twelve nests are arranged nearly side by side on the ledges of the rocks, and quite inaccessible.

The Bittern may now be said to be scarce, although I receive a few specimens every winter, from different parts of this and the adjoining counties. Some seven or eight years ago I had no less than thirteen bitterns at one time to set up, all killed the same week, the weather being very severe at the time.

The Glossy Ibis. A specimen killed at Slebach Hall is now in possession of the gamekeeper, and was a fine old bird.

Curlew. Common, during winter. I do not think they breed near here.

The Whimbrel. Common. I strongly suspect this bird breeds in this county, but I have been unable to find its eggs. I have watched several pairs, during the summer months, so late as the latter end of June, that had every appearance of having nests in the locality, but without success. They then generally leave us about two months, as I do not see them again until the latter end of September.

Spotted Redshank. Rather scarce. Those I have had were taken in the autumn, and were young birds.

Common Redshank. Common.

Green Sandpiper. A few of these beautiful birds may always be obtained, about the margins of our fresh-water rivers and ponds, during the autumn and winter.

The Common Sandpiper. Common. I make no doubt these birds breed here, but I have never found their eggs.

Greenshank. Occasionally taken in the autumn.

Avocet. Rare. Only two specimens have come into my hands to stuff, and these were killed near this place in winter.

Blacktailed Godwit. Scarce.

Bartailed Godwit. Common.

Woodcock, Snipe and Jack Snipe. Common.

The Great Snipe has, in several instances, been killed in this county.

The Knot. Common in autumn : and these are young birds of the year.

The Dunlin. Common.

Purple Sandpiper. Rather scarce.

JAMES TRACEY.

Pembroke, February, 1851.

Observations on the Waxwing (Bombycilla garrula).

By the REV. JAMES SMITH.

By a communication from Mr. Thomas Edward, of Banff, I am informed that a specimen of the waxwing was shot, near that town, in the earlier part of this present month. It was a male ; and its plumage was more beautifully vivid than that of a female, which the same individual examined last season with the utmost care, and of which he inserted a minute description in a local newspaper. This difference in the brilliancy of the plumage, he is inclined to attribute to the difference of sex. In the female, now referred to, the carmine tags, which constitute the tips of several of the secondary quills, and which so closely resemble the finest red sealing-wax, were six in number ; whereas, in the male, to which the present communication refers, they were only five, and were, moreover, not so long. This bird was, when shot, in fine condition, was full of flesh, and was very fat. On dissection, his stomach was found to be crammed with 'rod-dens,' which is the name in Lowland Scotch for the berries of the mountain-ash (*Pyrus aucuparia* *), or the rowan-tree, or in Scotland

* Aucuparia is, apparently, a barbarous adjective formed from *aucupium*, 'the art of bird-catching' ; and it may intimate that by means of its conspicuous berries, the mountain-ash possesses the property of catching, or of attracting, many of the feathered tribes while they are in quest of their food. It would, perhaps, be not unworthy of your editorial station, were you to impress upon your correspondents the propriety of, now and then, explaining the meaning of such scientific, but by no means obvious, terms as they may have occasion to use. I cannot help being strongly of opinion that this is a boon which many of your readers who are ignorant of the dead languages, as they are called, would be inclined to regard as by no means inconsiderable. It is astonishing how long an individual will continue, without reflection, to make use of a word, which to him is, strictly speaking, nothing but an unsubstantial and an unmeaning sound. How different does such a word become, when he is aware of its roots and of its literal signification ; and what a pleasing and a continued light does it emit, where formerly all was darkness and uncertainty ! It is like the opening of a

the rauntree,* along with a few seeds of dog-hippings, that is, the hips of the common dog-rose (*Rosa canina*).

The word Bohemian ought never to be used as constituting a part of the name of this bird. The waxwing is neither peculiar to Bohemia, nor would it seem to be the case that it makes its appearance there more frequently than in many other portions of Europe. One of the names, indeed, by which it is known in Germany is snow-bird (*Schnee vogel*), showing that, in the opinion of the inhabitants, it proceeds from where winter has his stern sway. The generic name *Bombycilla*, is evidently from *bombyx*, *bombycis*, 'the silk-worm', and also 'a robe of silk'; in composition, perhaps, with *cilleo*, or *cileo*, to 'move' or 'agitate', a verb, which soon became obsolete, but which was used in the earlier ages of Roman literature. It refers, without doubt, to the silky appearance of the plumage, and to the habits of the bird in raising and depressing its crest, and in moving and probably expanding its tail. For a similar reason, it has received in Germany the appellation of silk-tail (*Seiden schwanz*), the strict propriety of which I cannot, however, perceive, as the silkiness of its plumage is not confined to the tail.

It is, at all times, interesting to trace the links by which the Almighty proceeds so minutely in the amazing chain of existence, rendering it difficult, or rather impossible, to say at what point any particular structure absolutely ends, and another absolutely commences. In this curious and most important department of zoology, Mr. Swainson has undoubtedly done much; although, of his labours, I cannot help entertaining the general impression that he has become entangled, as it were, in a favourite theory; and that, unconscious to himself, he is sometimes more anxious to make nature bend to the quinary system, than simply to receive and to expound

dark lantern. In reading and writing, moreover, we are sometimes too apt to think, that whatever may happen to be familiarly known to ourselves, will, as a matter of course, be equally so in the case of all others.

* In many parts of Scotland the mountain-ash, and the woodbine or honeysuckle, were, and it is to be feared, in some few quarters still are, regarded as a sovereign spell or protection against witchcraft. A portion of either of them, placed above the door, was sufficient to prevent the most formidable of those malicious beings, the witches, from entering the house, or from doing its inmates harm. Hence the well-known Scottish couplet:

" The rauntree an' the woodbin
Will haud the witches on come in."

the varied phenomena which arise before him in his survey of the works of creation. I would say this, however, with diffidence, because the circles, representatives and affinities, the typical and aberrant species, and the osculant points of his system, are so complicated, and require so numerous an array of precise and special ideas to be present to the mind at one and the same moment, that I have never been able to obtain a conception of it as a whole so distinct in its character as to be in any measure satisfactory or instructive. I may thus be guilty of speaking against an arrangement, which may, after all, be found to unfold the general plan which was adopted by the Almighty when he called into existence the animated beings to be met with in our world. But to return: Mr. Swainson remarks that there is an evident relationship between the waxwings (*Bombycillinae*), of which three species only have hitherto been discovered, and the well-known family of the swallows. This is seen in the wide gape, the lengthened wings, and the comparative weak feet of the waxwing. On this account, he proposes to call them swallow-chatterers. By this, he at least gets rid of the anomaly, which is caused by the Japanese waxwing (*Bombycilla Phœnicoptera*) having, in reality, so far as is yet known, no wax-like appendages at all.

When we wish to know anything of the waxwing, beyond its mere name and its technical description, we must betake ourselves to foreign sources. In the language of science, the bird for many a year has been *garrulus* or *garrula*; varied only according to the gender of the word to which it has been attached; and in our own tongue it has, in like manner, figured for the same period as an incorrigible chatterer. But what is the testimony of those, who have endeavoured in person to make themselves acquainted with its character and manners? "No name," says the Prince of Musignano,* "could be more inappropriate for these birds than that of chatterers, as there are few less noisy; and they might even be called mute with much better reason. When taking wing, they utter a note resembling the syllables *zi, zi, ri*, but are generally silent." (Wilson's 'American Ornithology,' Sir W. Jardine's edition, vol. iii. pp. 459 and 463). Dr. Richardson, who, in his remote and dreary locality in the Arctic

* In one particular, this distinguished ornithologist is apparently inconsistent in regard to this beautiful bird. In page 458 of the volume mentioned, he speaks of it as being exclusively frugivorous, whereas in p. 459 he informs us that in summer it seizes upon insects, catching them dexterously in the same manner as its distant relatives, the flycatchers; and, in p. 462, he observes that, during summer, insects constitute its principal food.

regions of North America, seems to have neglected no opportunity of investigating the habits of the animal creation, informs us that he one day saw a flock of waxwings, consisting of three or four hundred, alight in a grove of poplars, and all on one or two trees, making a loud twittering noise. ('Fauna Boreali-Americana,' Birds, p. 238).*

It will be remarkable if this beautiful bird shall appear, in the present season, in the same unusual numbers as it did at this time last year. Although there exists, no doubt, a sufficient and a propelling cause why it should abandon its native fastnesses during particular years to a greater extent than during others; and why, in a great majority of years, it should not be seen in Britain at all; it is, nevertheless, true, that the most observant and sagacious ornithologists have hitherto been unable to obtain any satisfactory information on this seemingly anomalous, but very interesting point. But be this as it may, no one will deny that it is not a little consolatory to be able to say that the appearance of a greater number of waxwings than ordinary does not now alarm the nations of Europe, as it did in the days of our comparatively unenlightened and superstitious forefathers, when such an event was looked upon as the infallible harbinger of public calamity, and the ominous herald of the demon of war. And yet, as regards themselves, the waxwings visit our shores in the enlightened times in which we are so frequently told we live, with a far greater certainty of death than when they were even denounced and execrated as the immediate forerunners of supernatural wrath. No sooner are they beheld, than every gun in the vicinity is pointed against them; and they are hunted from tree to tree, and from thicket to thicket, till an end is put to their inoffensive existence; and till they dye with their blood the inhospitable soil, from which their instincts were insufficient to keep them away. Why should this be the case; and why should not those individuals, in whose locality they may chance to appear, find far more pleasure, and incomparably more amusement and instruction from admiring their silky and radiant plumes, while these are glowing all over with life and with health; and from studying those wonderful habits and movements, which their Creator, who wishes them to be as happy in their way as he wishes ourselves, has taught them unerringly to exhibit, than from looking at

* He considers the front and the under tail-covers of the waxwing as affording an example of the colour known to the ancients by the name of *helvolus*, or *helveolus* (Pliny, lib. 14, cap. 2, 4). Of this colour, the component parts are said to be buff, tile-red and chestnut-brown.

their dingy, and at best, their distorted forms, as they stand stiffened, and staring with unmeaning eye, on the dusty shelves of a crowded museum? Who can tell what stay they might not be induced to make among us, and what opportunities might not, in consequence, be in our power of ascertaining numerous particulars of which we are at present profoundly ignorant, were they not incessantly persecuted, killed, or frightened away? Of all the notices, and they were exceedingly numerous, which appeared in the 'Zoologist,' in regard to the death of these birds during the by-past year, I do not recollect one* in which any intimation was given as to their living appearance; their manner of feeding, the character of their flight, the cries which they uttered, or the general habits which they showed. We need not, therefore, wonder that we have by our own exertions added scarcely anything to the particulars which we shall find recorded of these birds in the pages of the earliest of our native ornithologists.

By such of your readers as may have thought it worth their while to peruse what has now been written, I am anxious not to be misunderstood. When a bird, which has not been previously seen, makes its appearance in our country, or when it is one with the form, or flight, or cry, of which we are not, when it comes in our way, individually acquainted, I should not, on such an occasion, be disposed to maintain that it ought not to be killed, in order that we might be enabled to establish its identity, and to examine it thoroughly and at our leisure. What I would take the liberty to deprecate, is the continued and the wanton destruction of all such birds, as, although comparatively speaking rare, are nevertheless familiar in their appearance to every one acquainted, however slightly, with natural history; such as have been repeatedly examined and described, both in their external appearance and in their internal structure; are accurately depicted in standard works, to which there is easy access; are in the possession, in a stuffed form, of no inconsiderable number of private individuals; and are readily to be seen in almost every public museum of any note throughout the kingdom.

JAMES SMITH.

Manse of Monquhitter by Turriff, Aberdeenshire,
January 30, 1851.

* There is I find a solitary one from Mr. Norman, in the 'Zoologist' (Zool. 2769), who, speaking of a flock of them, says "they were described as making a chattering noise, very much in the manner of the magpie." This is so far confirmatory of the common name.

Occurrence of the Roughlegged Buzzard (Buteo lagopus) on Marlboro' Downs.—A very fine specimen of the roughlegged buzzard was killed, June 16th, last, on the Marlboro' Downs, at a small village called Ofbourne. The bird is now in the possession of Mr. Withers, of Devizes. — *Thomas Kemur; Avebury, Marlboro, Wilts, February 3, 1851.*

The Chiffchaff in January.—I have just received a communication from Mr. Burt, of the Torquay Museum, informing me that he has been recently preserving a specimen of the chiffchaff, which was shot January 10th, near that place. The early appearance of this bird is, I suppose, fully to be accounted for by the unseasonable weather we are experiencing. — *Alfred Newton; 19, Lowndes Square, January 25, 1851.*

Note upon the Blackcap (Sylvia atricapilla).—It seems to be an undecided question amongst naturalists, whether this pretty little warbler does or does not remain with us during the winter months. There is considerable reasonableness apparently to be said on either side, *pro* and *con*; at the same time I do think, when one reflects upon the nature of the bird under discussion, its usual food, &c., that to any observant and clear-sighted judge, the evidence must appear stronger in favour of the latter than the former, *i.e.*, rather against its wintering here, either as a regular, ascertained fact, or as a very common occurrence. As a motive for my thinking thus, I would state an experience which caused me to come to this conclusion in respect to *Sylvia atricapilla's* residing in our leafless bowers during the coldest portion of the year. Living in a retired and beautiful village not far from Dover, some three or four winters since, a blackcap was brought me by some boys, in the month of December (if my memory serves me), which had been what they termed "run down" (a cruel and barbarous amusement much practised by lads in this part of England, and not, I fear, an obsolete custom in other counties). Snow was on the ground; the weather quite in accordance with the season; and most of the feathered tribe, tamed by lack of food and coldness of the atmosphere, sought rather the haunts of men, than the wide, open woodland of nature; their delight in the joyous days of June. Our little friend wrested from the grasp of unfeeling creatures, as well as natural privations, gradually recovered, and seemed to regain its wonted sprightliness. For more than a month I kept it confined in a cage, feeding it as well as I was able, on the few insects, &c., which were to be found; but in that respect I can safely say it had sufficient to support its existence. Towards the end of January, the following year, the coldness of the weather increased, and in consequence I firmly believe my pretty prisoner met an untimely end, and fell a sacrifice to a season it was never adapted to contend against; for one frosty morning, on paying my customary visit, I found the little fellow stretched at the bottom of his cage, lifeless and frozen to death. If such be the fate of one in a comfortable room, what must be the fate of others in the open air, exposed to the blasting winds of winter? — *W. H. Cordeaux; Canterbury, January, 1851.*

Occurrence of Richardson's Skua (Lestris Richardsonii) at Brighton.—I killed, yesterday, about two miles from here, Richardson's skua, in beautiful plumage: it is a scarce bird here. — *T. Thorncroft; 33, North Lane, Brighton, January 24, 1851.*

Sea Birds at Weymouth.—Amongst the birds lately shot here, and now in the possession of Mr. Richard Rolls, naturalist and preserver, are the following:—

Northern Diver, in the plumage of the second year; shot in Weymouth Bay, December 9, 1850. One was caught alive on the beach, on the 8th; this was in the plumage of the first year. In the one in Mr. Rolls' possession, the black ring had

appeared, and nearly met on the front of the neck: the bird measured thirty-one inches.

Gray Phalarope; shot December 16th, at Glanville's Wootton, near Sherborne: this bird is often a numerous winter visitor. I mention it merely as being an inland occurrence.

Blackthroated Diver; shot in Weymouth Bay, December 24th. This bird has the mature plumage, with the exception of the throat, in which the black ring is just appearing: this is the first of the species that has passed through Mr. Rolls' hands, and he has been in business fifteen years.

The Kittiwake, both old and young, are very numerous here in the winter, and although they breed in the Isle of Wight, they are never seen here in the summer. The young birds are called pigeon-gulls, and the old, blue-backs. A specimen of the laughing gull (*Larus atricilla*), of Yarrell and Pennant, was shot here last winter and sold for one shilling: I heard of it by chance. A gunner here was telling me of his gunning feats, and said, last winter he killed nine gulls at a shot. They were feeding in Lodmoor Marsh, and he approached them under cover of a hedge; when on showing himself, they flew up, and he killed nine. He stated eight were alike, but the ninth had a bill and legs the colour of red sealing-wax, and a beautiful pink breast and belly. A gentlemen met him and gave a shilling for the bird, and would have given half-a-crown had it been shot clean.

The Redbreasted Merganser (*Mergus serrator*), male and female: they are very plentiful in the bay, and are called here mullett-hunters.

The Puffin (*Alca arctica*). A solitary individual was caught under the rocks, at Portland, on the 19th of January; it was very emaciated and the colours very dull: it was probably either a wounded bird, or had been driven over by the long-continued and heavy gales from the south and west. This is worth recording, although it is pretty clear it was not a willing visitor.

The Green Sandpiper (*Totanus ochropus*). A specimen was killed and brought to be stuffed.

Little Auk (*Alca Alle*). A single specimen was caught alive on the Smallmouth Sands, January 31st.

We have had two or three small flocks of Gannets; and I have seen two or three Skuas: they are called here sea-hens.

The late rough weather has starved the poor Kittiwakes; they can stand cold weather, but not thick water; the latter prevents them fishing. The birds fly within a yard or two, and many are knocked down with stones. They do not appear to feed inland, like the blackheaded gulls; depending solely on small fish and other things swimming under the surface: they suffer much more than the blackheaded. They feed a great deal on what the tide washes out of the harbour, hovering just over the eddy. One that I examined had eaten the liver of a skate, which filled its crop and throat and was hanging out of its beak.—*William Thompson; Weymouth, February 5, 1851.*

Variety of the Cole Titmouse (Parus ater) and Notes on some other Birds.—I this morning observed, for a considerable time, in Sutton Park, a beautiful variety of the cole tit. The white mark on the nape of the neck was continued in a broad and well-defined line, over the crown of the head to the upper mandible. Owing to the extreme mildness of the season, winter visitants are unusually scarce. On the large pools in this neighbourhood I have seen nothing but mallard, widgeon and teal, and

these in very limited numbers, with the exception of once or twice a solitary bird, which was, however, so shy, that I have been compelled to be satisfied with a most distant acquaintance. Warm as the affections of birds may be towards their congeners; when man is concerned, a certain degree of coldness is required to induce them to break the ice of their ordinarily reserved and timid disposition. I think I have noticed that the tits, particularly the great tit, the blue tit, the cole tit and the longtailed tit are unusually numerous this year. I may say the same of the gold-crested regulus. A pair of Royston crows have paid us a visit; a very unusual circumstance here: I wish they might be induced to build, as there are many eligible sites in the neighbourhood; but I fear they have only taken a lodging for the season.—*F. K. Amherst; St. Mary's, Oscott, January 25, 1851.*

Note on the Cirl Bunting (*Emberiza cirrus*).—By this morning's post I received a male cirl bunting, shot yesterday at the Leases, near Bedale, Yorkshire, by Mr. T. Strangways. As Mr. Yarrell has only mention of one being shot so far north, perhaps this will not be thought unworthy a notice in the 'Zoologist.' I am disposed to think the cirl bunting is not an unfrequent visitor to the North Riding of Yorkshire; but, that like many other of our rarer visitors, it is either not generally known as a distinct species, or not noted. In February, 1840, I shot a young male, near St. Agatha's Abbey, Richmond, Yorkshire; and on the 29th of December last, I saw two males on Askew Moor, near Bedale; but at the time we were in chase of a very beautiful ermine weasel (*Mustela erminea*), which we succeeded in killing, but lost sight of the buntings: they were in company with a flock of green and yellow buntings and chaffinches. The bird first mentioned may be one of the same, as it was shot not more than a mile from the same place.—*Richard Strangways; 70, and 71, Chiswell Street, February 6, 1851.*

Occurrence of the Rednecked Grebe (*Podiceps rubicollis*) in Gloucestershire.—A young specimen of the rednecked grebe was shot, near Bibury, in this county, in January, 1850, and is now in the possession of Mr. W. Bowly.—*W. Joshua; Gloucester Street, Cirencester, February 1, 1851.*

Occurrence of the Little Gull (*Larus minutus*) at Weston-super-mare.—Permit me, through the medium of your interesting periodical, the 'Zoologist,' to inform the ornithological world of another locality visited by that rarity, the little gull. A mature specimen was shot on the 7th of January, in the neighbourhood of Weston-super-mare, situated on our channel, and about twenty miles from this city. As a minute description of its plumage would be superfluous to the ornithologist, and uninteresting to such as do not make birds their study, I will refrain from saying much on that head, but briefly state that this pretty little creature resembles the kittiwake in its second year's plumage, except in size; it being but two-thirds as large as that gull. There is also a very pretty, rosy tinge on the breast, much resembling that of the roseate tern. As the season has been by no means severe either in England, or I believe on the continent of Europe, and the little gull, as far as I can ascertain, is an inhabitant of more northerly regions, it seems rather perplexing as to what to attribute the exciting cause of its leaving its own snow-clad isles and icy shores.—*John N. Duck; Kingsdown, Bristol, February 14, 1851.*

Occurrence of the Spiny Shark (*Echinorhinus spinosus*) *at Gamrie*.—Perhaps the following particulars may not be without interest as they have reference to an animal which has not been long introduced into the British Fauna, and a specimen of which, so far as I am aware, has never been met with on any previous occasion, in the seas connected with Scotland. It is the spinous shark (*Echinorhinus spinosus* : ‘echinos,’ a hedgehog ; ‘rinos,’ a skin ; in reference to the spines with which its skin is studded). In a communication from Mr. Thomas Edward, of Banff, he says : “I was down yesterday (January 1st, 1851), at the rocks of Gamrie ; and my attention was attracted by the screaming of a number of sea-fowl, to an object which was floating in the water at the foot of one of the highest of the cliffs, and around which the birds were eagerly quarrelling and fighting. On approaching, I found that this object was a large fish, or rather the remains of one, upon which the various species of sea-fowl had been feeding : the head had been broken off by being dashed and rubbed against the rocks ; for, to all appearance, the animal had been dead for a long time, and had been much tossed about by the waves. The tail, also, had suffered greatly, and the fins were all more or less broken. The tail was in shape like that of the common dogfish (*Acanthias vulgaris*), which is found here. The skin was of a dark blue colour, it had the appearance of leather, and it was thickly beset, or at least had been so, for many of them were injured, with a kind of prickles. These were curved like the talons* of a bird of prey, but were broadest at the base, that is, at the spot where they were attached to the skin or hide. The curve of these prickles or spines inclined from the head backwards in the direction of the tail. From the particular point where the head was broken off to the end of the tail, the length was about two yards. As I surveyed it, a thought struck me that it might be the spinous shark.” In order, if possible, to determine whether or not this was the case, I sent Mr. Edward the 39th volume of the ‘Naturalist’s Library,’ which contains an account, by Dr. Hamilton of Edinburgh, of the Squalidæ, a family of the sharks, and in which there is a coloured engraving of the shark of which we are speaking. The figure, although perhaps by no means remarkable as a work of art, and although somewhat carelessly and to all appearance too highly tinted, is nevertheless perfectly sufficient for the identification of the species. In reply, Mr. Edward observes : “I have now no doubt whatever that the animal discovered and examined by me was the spinous shark.” In what manner this rarely-seen inhabitant of the deep came by its death, or from how great a distance it had been drifted to the spot where it was discovered, it is, of course, impossible to say. I may further mention that, in May, 1849, a species of shark was captured about three miles off Trouphead (Zool. 2905), by some fishermen belonging to the village of Pen-nan : it had got entangled upon lines set for cod. When attacked it struggled desperately. A rope was at length got fastened around its tail ; the sails of the boat were all set ; four men pulled hard at the oar ; and in this manner, it was dragged with difficulty to the land. When on shore, it was found to be thirteen feet nine inches in length ; and its circumference, where at the thickest, eleven feet. After it had been embowelled, a boy threw into its mouth a piece of tangle at least two inches thick : this it instantly crushed to pieces. By one of the fishermen, who had at one time

* “These spines,” says Dr. Hamilton (‘Naturalist’s Library,’ vol. xxxix. p. 318), “exactly resemble the prickles on the stems of the rose-bush.”

been engaged as a whaler, it was pronounced to be the Greenland shark (*Scymnus* borealis*). Its jaws, mouth, and part of the skin, came into the possession of the Rev. Mr. Harris, of Gamrie, by whom they were presented to the splendid museum of the University of Edinburgh. The authorities connected with that institution characterized them as magnificent specimens. I had an opportunity of seeing them; and it seems impossible for the imagination to conceive an apparatus more terrible than the mouth, and fitted with more tremendous certainty to carry into execution the purposes which, in its construction, the Creator had in view. The teeth, arranged all around in rows the one behind the other, have exactly the appearance of a collection of surgeons' lancets with their cutting edge uppermost, placed as closely together as possible, and at that precise angle in which their power, when called into use, will operate and cut in twain with the most speedy and the most direful effect.—*J. Smith ; Manse of Monquhitter, Aberdeenshire, February 8, 1851.*

Occurrence of the Porbeagle Shark (Lamna cornubica) near Bournemouth.—On the sandy beach towards Hengistbury Head, I observed a specimen of the above ; it was about four feet and a half long. This specimen, although not much shorter than the one recently taken by the Portland fishermen, off the Chesil Bank, and which I received from Mr. Thompson, of Weymouth, struck me as being remarkably thin in girth for its length, and I concluded that it must have been a young one. There were recent prints of the footmarks of the fishermen who had been hauling the seine, and I have no doubt that the fish, like the one at Weymouth, was drawn ashore by them.—*W. F. Templer ; Charmouth, Dorset, December 14, 1850.*

Occurrence of the Black Bream at Lowestoft.—I have just received a specimen of the black bream, from Lowestoft, which is a fish I have not previously met with on this coast. About a fortnight since, a fine specimen of the Ray's bream was washed ashore at the same place.—*J. H. Gurney ; Easton, Norwich, December 17, 1850.*

Occurrence of the Short Sun-fish on the Norfolk Coast.—Two large specimens of the short sun-fish were taken on this coast during the month of November ; the first off Lynn, and the second off Gorleston, and therefore both of them at the mouths of rivers.—*Id.*

Occurrence of the One-spotted Goby (Gobius unipunctatus) at Lowestoft.—I saw, yesterday, a specimen of the one-spotted goby, taken in a net just outside the south pier of the harbour at Lowestoft. I am not aware that the occurrence of this species has been previously observed on the coast of Norfolk or Suffolk.—*Id. ; February 15, 1851.*

Occurrence of the Argentine at Redcar.—Yesterday I found four small specimens of the argentine on the beach, about a mile from the Tees' mouth. They all had the same cucumber-like smell as the smelt.—*T. S. Rudd ; Redcar, February 14, 1851.*

Occurrence of Ray's Bream (Brama Raii) near Edinburgh.—Several specimens of Ray's bream have been cast ashore in the Firth of Forth lately ; apparently indicating, in connexion with its occurrence at Redcar (Zool. 2971), something like an immigration of this fish on our shores. One of these, which was noticed by Mr. Thompson at the last meeting of the Edinburgh Physical Society, was apparently in a diseased

* *Scymnus*, originally a Greek word, was employed by the ancients to denote the young of various animals, and especially of that to which they gave the name of sea-calf.

state, as it swarmed with *Entozoa* throughout every part of it. Another, which was brought to Duddingston for sale, in the end of November, by one of the Fisherrow fish-women, was perfectly fresh and in good condition. It was twenty-two inches and a half in length: nearly its maximum size.—*R. F. Logan; Duddingston, near Edinburgh, February, 1851.*

Earthworms found Dead.—Having frequently noticed numerous earthworms lying dead upon the ground, at other times than after any considerable fall of rain, I was unable to account for this destruction until I witnessed what seemed to explain the matter, and which I would record in the ‘*Zoologist*,’ in the hope that other observers may confirm my statement, and that the attention of entomologists may be attracted to the subject, so far as it appears deserving of notice. I have beheld worms hopelessly fixed in the jaws of grubs of two different kinds. In one instance the worm was descried in the act of emerging from the soil at its utmost speed with a wireworm so firmly fastened to the tail by its forceps, that no wriggling through the short grass could disengage them. In the second example, the persecutor was a much larger grub, but of a similar confirmation; namely, with a short body and a long abdomen (if these terms are correct), the colour being black on the upper, and a dirty (or blackish) white on the under surface. In this case the prey was proportionally larger than that of the wireworm. Both these grubs possess short, but apparently very strong and sharp forceps, with which, when the above observations were made, they held on most tenaciously, permitting themselves unresistingly to be dragged along the ground, and to be rolled over and over in the struggles of the worms, which seemed most anxious to escape from the gripe of their enemies. These incidents having been only casually noticed, no pains were taken to ascertain whether the injury is always fatal, and in what length of time; as also whether the attack is for the purpose of obtaining food. The dead worms, which are presumed to be often killed in the manner now described, do not present any conspicuous evidences of mutilation. An obvious reflection arising from what has been mentioned is, that the circumstance is one of the innumerable proofs of the wisdom and goodness of a beneficent Creator in so ordering and maintaining a balance among his works, that the inconveniences we may incur from some of his creatures is compensated by advantages derived from other habits of the very same animals.—*A. Hussey; Rottingdean, January 7, 1851.*

Great Beauty of South-American Lepidoptera.—In common I suppose with most of your readers, I have perused with great pleasure the letters which have appeared in the ‘*Zoologist*,’ from Mr. H. W. Bates, who is at present employed in making entomological collections in South America. These letters appear to me to be distinguished by a devotion to science, and by an enthusiasm which are seldom exhibited, but which rarely fail to carry the individual on to success in whose bosom they have their abode. His descriptions depict the primeval forests of South America, where, in not a few instances, no European foot but his own seems ever to have trod, with a

glowing freshness and with a vivacity which brings everything in the clearest manner before the eye of the mind. Through the medium of a friend I have procured from Mr. Stevens, the agent of Mr. Bates, in London, a few of the more beautiful of the diurnal Lepidoptera. They are now before me; and their contemplation brings forcibly to the recollection the well-known lines of Thomson:—

“Who can paint
Like Nature? Can imagination boast,
Amid its gay creation, hues like hers?”

Certain philosophers are disposed to maintain that beauty of colour is altogether relative; that it is in no case positive and absolute; and that it is especially determined and regulated by that faculty of the mind which is termed the association of ideas. They say, for example, that blue or green, however lovely in tint, would be regarded as a positive blemish, or rather as ugly in the extreme, if seen on the cheek of an otherwise beautiful female; and they assert that the charm of the first-mentioned colour arises from its being constantly associated in our thoughts with the glorious firmament of heaven; and that of the second, from its calling to our mind the hue of the robe worn by nature in those seasons when she is the most enchanting. With such reasoners I agree so far; but my belief in this respect does not stop here. I hold that there are hues and shades of colour which are positively beautiful in themselves and independently of all associations whatever; and to look upon which merely as patches of colour, affords a gratification of no mean description. And for the truth of such an opinion, I know not where I should obtain a stronger and a more pleasing proof, than from the Lepidoptera to which I have alluded. The patch, for instance, which is on the posterior wings of the *Hectera Esmeralda*, and which may be characterized as a compound of carmine and of the deepest blue dotted with two spots of vermillion, will in itself, and irrespectively of association, communicate a pleasure to every eye which looks upon it. The band of silver blue on the wing of a large *Morpho*; the deep tone, to speak in pictorial phrase, of the black in the *Papilio Sesostri*, finer even than the finest velvet of Genoa; the rich dark orange on *Epicilia Ancæa*; the blue, shining in one unnamed species like polished steel, in another (*Thecla*) with a radiant clearness, which ultramarine itself could not surpass; the satin-like golden green, the pearly lustrous white, and the deep shining emerald ribbands in *Urania Boisduvalii*; the crimson lines and spots, deeper and clearer than blood, in a species to which no name is attached, of *Papilio*; the small spangles of silver with which the under surface of one of the least among them (*Cupido*) is, as it were, incrustated; the iridescent and delicate violet with which, on the same surface, a particular species of *Hectera* is, so to speak, washed over in a way which calls to our remembrance the ‘scumbling’ given by Rembrandt as the finishing touch to his finest productions: all these and many more, possess a beauty which I contend, in opposition to the doctrine of Alison and Jeffrey, is absolute in itself; which is altogether irrespectively of association; and which the most skilful of human pencils would find it impossible completely and properly to copy.—*James Smith; Manse of Monquhitter, Aberdeenshire, January 31, 1851.*

Note on Cheimatobia boreata.—“Nothing new under the sun,” says the Wise Man; “there is nothing new.” One of your correspondents, in his note on the above-named insect in the ‘Zoologist’ (Zool. 3011), remarks, that previous to the appearance

of my friend Mr. Doubleday's list, "the captured specimens were looked upon as varieties of other species": or, in other words, their specific differences had not been detected. I have no means of knowing whether such was actually the case amongst the entomologists of the north, other than the above: but the council of the Entomological Society having directed the society's collection of British Lepidoptera to be arranged in accordance with my catalogue of those insects, recently published by the Trustees of the British Museum, a number of Haworthian specimens became emancipated from their hiding-places in ungainly boxes; and amongst them were several Cheimatobiæ. My friend, Mr. Bond, in looking over the genus *Eupithecia* as rearranged, caught a glimpse of the insect referred to, both genera being placed in the same drawer, and directed my attention to one of the specimens of *brumata*, assuming it to be a *boreata*. On reference to '*Lepidoptera Britannica*,' p. 305, I find a male variety of *brumaria* described by Haworth, agreeing with *boreata*, with the remark, "*Fortè distincta species*;" and the observation, "I received this strong variety from Captain Lindegren, who has frequently assured me, that he considered it a distinct species." I have this day collated the specimen in question with *boreata*, and find it to correspond. As Haworth's description appeared in 1810, the insect has been in our cabinets, unknown, upwards of forty years!—*J. F. Stephens; Eltham Cottage, Foxley Road, Kennington, February 10, 1851.*

Note on Hibernia rupicaprararia.—This insect is exceeding abundant around here, attaching itself exclusively to the hawthorn-hedges. I never met with the females before the end of last month, when I took the sexes *in copulâ*; and on Saturday evening, the 8th of February, about twenty more. They did not begin to make their appearance until a little before nine o'clock, when by close observation I detected them crawling along the hawthorn twigs; I noticed also that they went to the very tip, where they quietly remained until joined by the males. They are very easily disturbed, as on the least movement of the bush they at once fell to the ground. The males are found either creeping up the grass underneath the hedge, or suspended from the bush.—*John Scott; London Works, Renfrew, February 10, 1851.*

Note on the Habits and Transformations of Aglia Tau.—This moth which belongs to the tribe of Endromidæ, is one worthy of remark, both in larva and imago state. Among the many insects I have had the pleasure of rearing, some from the egg to the imago (as in the present instance), and many from larva, during many years sojourning with my family in Switzerland, this is one which afforded us much interest and satisfaction: interest, on account of the extraordinary changes from egg to imago; and satisfaction, as it is an insect which has seldom been raised from larva, much less from egg. It is worthy of notice here, that the *A. Tau* is a rather local insect. It is found in local situations in the canton of Valais, it is likewise so in the canton of Vaud; and I will here remark that it is seldom met with (except here and there a stray specimen) throughout the whole length of the Lake Leman, on the Swiss side of the Lake, except in one forest near Lausanne. This forest is situated at about half an hour's walk from the town of Lausanne, in a northerly direction, and is called the Forest of Sauvabelin. It is in this forest that I am sure any entomologist will be amused by the sight of these fine *Aglias*, and perhaps a few words on the insect may be useful to any who should feel disposed to visit that place. The *A. Tau* is so abundant in this forest, that any person visiting it, any day from about the 24th of April to the 3rd or 4th of May, before twelve o'clock, can hardly fail to see the insect flying about and dodging to and fro like the *Bombyx Quercûs*, but seldom higher than four

feet from the ground. The perfect insect I will not here describe, as doubtless it is known to most entomologists. The last few days of April, this insect becomes so abundant, that it is not unfrequent to have them flying in one's face; they, however, prefer flying close along the ground. Before I say anything of the larva, I will here mention that these troublesome creatures dodging about are in general the males. The female is much larger and of a paler hue, and is found against the trunks of the common beech, at about three feet from the ground; and if there should be any wind, it should be searched for on the sheltered side of the tree. The female, being very scarce in proportion to the other sex, is much sought after in this forest, and as it is invariably found against the beech (on which its larva feeds), it must be diligently searched for in those parts of the forest in which the greatest quantity of Taus are found flying, by looking carefully around the bases of all the beeches. The eggs are found on the low branches of the trees, sometimes on the leaves, at about the first fortnight in May: they are oblong and of a clear brown colour and few in number (about eight to ten). Towards the end of May, when the young *Aglia* is ready to come out of its egg, it begins to gnaw a circular opening in the egg-shell of the size of its head: this operation takes about a quarter of an hour. When it is completed, it stops for a few seconds moving its mandibles about, and presently crawls boldly out of its shell. The spines (with which the larva becomes armed) are then very small, and are bent one over the other, but they soon straighten and begin gradually to increase in size: they do not, however, attain their full length till about half, or three-quarters of an hour after it has been hatched. The head is disproportionately large. Before the first change of skin, the description of the larva is as follows: of a light greenish yellow, with five long spiny horns, of which two are on the first segment, two on the third segment, and one on the eleventh segment: behind this last one is a short spine of a red-brown colour. The spines are all forked at their extremity, excepting the short posterior ones. The colour of the large spines is pale yellowish, with the base and tip reddish brown; that of the posterior one is all reddish brown: these spines are moveable. There are five rows of very small pale yellow, semi-transparent spines: a rather dark dorsal line: head pinkish yellow, with two concentric reddish-brown lines thereon: stigmata greenish yellow: abdomen yellow: legs the same colour as the body. After the first and second change, then appears a series of oblique, pale yellow streaks on the sides, and a narrow pale yellow lateral line. After the last change but one, the spines are no longer forked: the thoracic legs are tipped with reddish brown; the spines are then of a rusty-red colour, gradually tapering from the base to the tip: stigmata reddish yellow: the incisions are also much stronger marked and the middle of each segment is rather elevated, and covered with small asperities. At the last change the caterpillar became as follows: caterpillar smooth, when full grown, spineless; rather attenuated both anteriorly and posteriorly: the incisions are also much stronger marked, and the middle of each segment (which are all elevated and well marked) is rather hollow or depressed. The third and fourth segments are rather more elevated than the others: ground-colour of larva, of a bright yellowish green, covered with minute, pale yellowish, tubercular spots, giving it a granulated appearance, and of a darker hue, on the lower part of the sides and abdomen; a narrow, pale, lateral line, separating the green of the abdomen from that of the sides, and on which is placed, on the fourth segment, a small, oval, crimson pouch, which the caterpillar opens when irritated; also a lateral series of oblique, pale yellow lines, one on each segment on either side. The part of the sides on which the

lateral line is placed is much dilated : thoracic legs green, tipped with reddish brown ; pro-legs rather darker green than body, tipped with brown : stigmata orange, and placed above the lateral line : head green ; mandibles reddish brown : abdomen dull green and very slightly hairy. The posture of repose of this larva is similar to that of the *Sphinx Ligustri* : the larva feeds little. At the end of July, when the caterpillar is full grown, it forms a loose cocoon by uniting some of the leaves of the beech with fine, silvery, silky threads, and changes inside this envelope into pupa ; passes the winter in this state, and changes into imago the month of April following. I believe we are the only entomologists who have at present succeeded, in the canton of Vaud, in rearing this insect from eggs.—*H. L. de la Chaumette ; Church Street, Stoke Newington, January 20, 1851.*

Capture of Ludius ferrugineus and Elater sanguineus near Cambridge.—I have much pleasure in recording the capture of *Ludius ferrugineus*. The specimen now in my possession was taken in August last, from a decayed willow-tree, near the bathing-place, Newnham. Near the same spot, in October, 1850, a specimen of *Elater sanguineus* was also taken by me.—*J. Brown ; 13, King's Parade, Cambridge, February 14, 1851.*

An Entomological Ramble among the Rocks of Chudleigh, Devon.

By H. T. STANTON, Esq.

ON the 8th of June, 1850, I visited Chudleigh for the first time ; the road thither, from Exeter, passes over the high ground of Haldon, whence a most extensive view (already sufficiently described in all guide-books) is obtained.

Haldon is an extensive tract of moor country, and reminded me strongly of the North of England and Scotland, yet I cannot speak highly of its entomological productiveness, as will be seen in the sequel. After passing Haldon the road gradually descends to Chudleigh, which is situated ten miles from Exeter and very near the Teign, a small branch of which flows at the foot of the rocks.

Arrived at Chudleigh, I had some little difficulty in finding my place of destination, which enjoyed the singular appellation of Palace Cottage ; it was nearly the last house in the place, and down a lane ; but this very circumstance which made it so difficult to discover, enhanced its value when found, it was outside the village, from the garden you walked through an orchard and found yourself immediately on the rocks : surely it was built for an entomologist.

But I am anticipating ; I did not set forth immediately in search of sport, but turned in doors and had some tea, and I must have remained thus occupied nearly an hour as I arrived at Chudleigh at five P.M., and my first capture bears date six P.M.

Tea being sufficiently discussed, I proceeded to be formally introduced to the renowned rocks of Chudleigh : it is not my business to describe these rocks geologically, suffice it to say, they are on one side perpendicular and of great altitude, and on the other side are approached by a gradual slope ; and a large portion of the sloping side has been worked as a limestone quarry, but has long been deserted, and is now planted over with apple-trees, and overgrown with all sorts of rank vegetation ; in short it is not unlike Charlton, but less trodden, and less haunted by children.

I of course expected, on my first appearance in a new country, to signalize my first

evening by some capture of importance ; but when I say that I spent a great portion of the evening in running after *Eupœcilia angustana*, I shall surely be thought to be joking, but so it is : I caught thirteen of this *valuable* insect the first evening, and before I left Chudleigh I had collected about fifty. If I am asked why I spent my time in catching so common an insect which nobody wanted, I must even confess, that I took it for something else, and thought I was bagging the rare *ambiguella*. I had been at Wickham the previous week, where *angustana* ordinarily swarms and I had seen none, and here in a strange place I found something like *angustana*, but already wasted. *Endorea pyralella* was very plentiful in the old quarry, and I found several *Pterophorus trigonodactylus* ; they sat chiefly among *Tussilago farfara* : does the larva feed on that plant ?

When standing on the top of the rocks my eyes looked longingly on a meadow which skirted their base, and which was bordered on one side by the little stream, the banks of which were fringed with a plantation of alders ; here surely was choice ground for an explorer : accordingly the following afternoon I visited it, but not with much success. Two *scutulana*, two *Cirsiana*, one *sequana* and two *fibulella*, being my best captures, if I except three specimens of a dull ochreous, almost denuded insect ; what this insect could be, puzzled me for a long while ; at length I guessed it might be *Röslerstammia granitella*, which I consider I ultimately proved by breeding that species from larvæ found mining the leaves of the *Inula dysenterica* in that meadow. I afterwards found that these extremely wasted *granitella* were no rarity, which is remarkable, as when a species is so over that it becomes extremely wasted, it generally becomes very scarce.

My second evening was devoted to further examination of the contents of the old quarry, and this time I had better success, taking three *Elachista gibbiferella*, Z. (*baspallidella*, *Sta. Cat.*), two *decorella*, two *Grapholita obtusana*, and several of those puzzling Tortrices, which Haworth in his simplicity called *simpliciana*. (The number of these species, and their correct names and synonymy would be a nice subject for a monograph : will any one try it ?)

The following morning, the 10th, I visited Great Haldou, but though the day was very bright, in that elevated situation there was too much wind, and *Thecla Rubi* and *Ceophora grandipennis* were my sole captures ; in a small wood adjoining the moor, which ought to have abounded in good things, I obtained two *Micropteryx Allionella*, and one *Eupœcilia maculosana* : in the afternoon I revisited the meadow, and by sweeping on a dry flowery bank, obtained singularly enough in two successive strokes of my net, a *Coleophora Alcyonipennella* and a *C. spissicornis*, and more oddly still, though I tried hard that afternoon, and other afternoons, I found no more of either. In a moist corner of the meadow I took a single specimen of *Adela rufimetrella*, of course much wasted, the middle of May being its proper period. (This insect should frequent the flowers of *Cardamine pratensis*).

In the evening I again explored the old quarry and captured three more *Grapholita obtusana*, one *Micropteryx rubrifasciella*, wasted, two *Elachista decorella*, one *gibbiferella*, and *Lithocolletis salicicolella* and *Spiniolella*.

June 11th ; being desirous of a further supply of *M. Allionella*, I set off in the heat of the day for the little wood at the edge of the moor, but found none ; a single *E. maculosana*, and a worn *Lithocolletis emberizæpennella* being my only captures ; along the road-side I found several *A. fibulella* and *M. Seppella* on the flowers of *Veronica Chamædrys*. In the afternoon I obtained by sweeping, in the old quarry,

several specimens of *M. Seppella*, and among them three pairs *in copulâ*, the males are, however, rather wasted.

In the evening I found in the meadow, amongst rushes, the common rush, *Coleophora alticolella*, rather plentiful, I also obtained a wasted *Eupæcilia notulana*, and though last not least, a hippopotamus, not the pachyderm, but the Tortrix.

The Hippopotamus Tortrix resembles its namesake, in being large, brown, moderately ugly, and in sleeping its time away in marshy places on the banks of rivers; its scientific name is *Ephippiphora turbidana*, and its portrait has already appeared in the pages of the 'Zoologist' (Zool. 2034).

Up to this time I had had bright, sunny weather, with only moderate breezes; but neither sunshine nor calm will last for ever, more especially in Devonshire, so the following morning I found a cloudy sky, and that abomination of entomologists (unless they are on the sheltered side of a good fence) a gale of wind. All my hitherto explored ground was impracticable in this weather, and where was I in a strange country to find a sheltered nook? I suspect I must have been a little out of humour, for I did not attempt to go out all the morning; and in the afternoon I sallied forth with the intention of walking to Newton, but before I had proceeded more than two miles, a small wood, in which I saw *Adela Degeerella* flying rather freely, diverted me from the high road; and afterwards finding in this wood a specimen of *Æchmia subdentella*, I spent nearly two hours in looking for a second.

The 13th was dull and showery, and I now conceived the idea of hunting the hippopotamus: knowing that the insect was attached to the *Tussilago Petasites*, I thought it extremely probable they would sit on these leaves, just as *Brunnichiana* sits on the leaves of *Farfara*: descending through the wood that fringes the rocks, I found two *Æchmia subdentella* and an *Olindia Ulmana*, and searching on the leaves of the *Petasites*, I found in the course of an hour, three hippopotami. Three in an hour was not very encouraging, but as I knew of no place which I could try for better sport, I resolved to try the river-bank again in the afternoon, and this time I had my reward; for between four and five o'clock that afternoon the *Turbidanæ* chose to fly, and I was enabled to bag twenty-eight of them, thus fairly rivalling Mr. Gordon Cuming. Thinking they might fly again at dusk, I returned, but only found two dozing on the surface of the leaves; however, I fortunately found a *Bucculatrix cidarella* (the fifth British specimen), flying near whitethorn and alder.

On the 14th I obtained two more *subdentella*, from a whitethorn hedge; and one *Olindia Ulmana*; three *Eupisteria heparata*, and five *turbidana* formed my sole captures during the afternoon, which I spent on the bank of the river.

The 15th was fine and bright, but it was to be my last day at Chudleigh; I tried again for *cidarella* and *Alcyonipennella*, but in vain: I sought for *turbidana*, but only found five. I swept the grass in the old quarry, but obtained nothing but *Dicro-rampa sequana*. My last capture was a single *Cecophora ochraceella*, which I found on the banks of the stream, amongst *Epilobium*.

Thus ended a very pleasant week at Chudleigh, but my number of captures was not great; and of many I found only single specimens. It does certainly seem to be the case, though I have long been unwilling to admit it, that insects, from some unknown cause, are not so plentiful in Devonshire as in most of the localities near London.

There is a grammar-school at Chudleigh, and I was told that some of the boys had been seen with nets in their hands; I did not, however, meet them myself, and

consequently know not what proficiency they may have made in entomology. Should this notice fall into their hands, they may learn from it the precise localities of many species which are desiderata to most collections, and by notifying their capture in the 'Zoologist,' will find a short-hand way to making a collection, in the offers of insects in exchange, they will receive from other collectors. They will find the hippopotamus a safe card, and one on which they are sure to win. — *H. T. Stainton; Mountsfield, Lewisham, January 24, 1851.*

Proceedings of the Zoological Society.

Evening Meeting, January 14.—PROFESSOR OWEN, V.P., in the chair.

The following papers were read :

'Remarks on the highest limit of Animal Life in the Alps;' by Dr. Schlagintweit.

'Further Remarks on *Balaniceps rex*;' by Mr. Gould, in which he developed its generic characters and affinities.

Mr. Gaskoin communicated the descriptions of twenty new species of *Columbella*, and one of *Cypræa*, chiefly from his own collection and that of Mr. Cuming.

Mr. Bowerbank read a paper 'On a New Species of *Pterodactylus* from the Chalk Formation.' The specimen consisted of seven inches and a quarter of the snout, of a head, which if restored on the scale of that of *Pterodactylus longirostris*, would indicate a length of twenty-five inches and a half; there are sockets for twelve teeth on each side; the distance between each tooth is about one inch and a half of the long diameter of the sockets, which are nearly equidistant from each other. The head is exceedingly narrow; at the eleventh pair of teeth from the tip of the snout it is but three quarters of an inch wide. One of the first pair of teeth remains in its socket; the whole of the other large teeth are displaced, but two of them are imbedded in the chalk near the sockets. The largest of them exceeds an inch and a quarter in length, they are slightly curved, smooth, and hollow at the base. A very fine radius and ulna of *Pterodactylus*, from the collection of Mrs. Smith, of Tunbridge Wells, and a similar pair of bones from the collection of Mr. Charles, of Maidstone, were also exhibited. The length of the former bones, the author states, would exceed ten inches, and the latter would be nearly seventeen inches. A tabular view of the length of each bone of the wing, and of the total distance from tip to tip was given, by which it would appear that the amount of expansion of the following species would be, *P. brevirostris* nine inches; *P. longirostris* one foot ten inches; *P. crassirostris* three feet two inches; *P. Bucklandi* four feet seven inches; *P. grandis* five feet five inches; *P. giganteus* six feet seven inches. Mrs. Smith's specimen ten feet two inches, and Mr. Charles's specimen sixteen feet six inches. The author believes the latter to be of the same species as the head described, and which he proposes to designate *Pterodactylus Cuvieri*, in honour of the great naturalist whose labours shed so much light on the history of these wonderful reptiles.

Evening Meeting, January 28, 1851.—R. H. SOLLY, Esq., F.R.S., in the chair.

Professor Owen read a paper 'On a New Species of *Pterodactyle* from the Chalk

(*Pterodactylus compressirostris*, Owen), with some remarks on the Nomenclature of the previously described Species.' The author apologized for bringing a species of extinct animal before the Zoological Society, but as its distinctive characters were best shown by comparison with those of the species described by Mr. Bowerbank, at the previous meeting of the Society, he thought it desirable that both descriptions should appear in the same work. After some general remarks on the pterodactyles, and a reference to the characters of the gigantic species described by Mr. Bowerbank as the *Pterodactylus Cuvieri*, Professor Owen proceeded to describe the portions of the fossil skull on which the new species was founded. They consisted of two portions of the upper jaw, including a part of the external nostril, the palate, and the alveoli of the teeth. The entire head restored, according to the proportions of those parts, must have measured from fourteen to sixteen inches in length. It differed from the still larger *P. Cuvieri* in the straight outline of the upper jaw, and its greater degree of lateral compression, from which the specific name was derived; also by its relatively smaller teeth, which are placed more widely apart in the jaw. The bony palate is extremely narrow, and presents a median groove between two longitudinal convex ridges. The sides of the jaw as they rise from the alveolar border, incline a little outwards before they converge to meet at the upper border, which gradually widens as the jaw extends backwards, but in a great part of its extent is a mere ridge. The bony walls of both portions of jaw present the characteristic compactness and extreme thinness of the pterodactyle's skull. So far as the present evidence of three well-marked species of pterodactyle (*P. giganteus*, *P. Cuvieri*, and *P. compressirostris*) goes, the organization of these singularly modified Reptilia, whose existence extended from the lias upwards to the chalk inclusive, had undergone no transmutation, no tendency to pass into any other or higher winged form of animal. Neither had it in any measure degenerated, but on the contrary had attained its maximum of development immediately prior to its final disappearance when, at the close of the secondary epoch in Geology, the pterodactyles were blotted out of existence.

Mr. Gray read a paper 'On a New Genus and Several New Species of Scutellidiæ and Echinolampidæ.'

The meeting then adjourned to February 11th.

Monthly General Meeting, February 6.—E. J. RUDGE, Esq., F.R.S., in the chair.

E. W. Cox, Esq., Mansfield Parkyns, Esq., and W. Hartree, Esq., were elected Fellows. Mrs. Remington and E. Robins, Esq., were proposed as candidates for the Fellowship.

The Report of the Council stated that the number of visitors to the Gardens during the month of January, presented an increase of 5533 over the corresponding month of 1850. The additions to the Menagerie are of unusual interest, including a fine male specimen of the Malayan tapir, and two pairs of mandarin ducks (*Aix galericulata*). These beautiful birds having the full use of their wings, exhibit for the first time the peculiar arboreal habit of the genus, and may be observed flying to a perch several feet above the ground in the large aviary in which they are effectively displayed. Among other additions and improvements now in progress, the Council have made an arrangement with Mr. Gould, to exhibit his brilliant collection of mounted humming-

birds, in a building which will be constructed expressly for its reception in the Gardens.—D. W. M.

Proceedings of the Entomological Society.

January 27, 1851. (*Anniversary Meeting*).—G. R. WATERHOUSE, Esq., President, in the chair.

The Secretary having read the bye-law relative to the Annual General Meeting, the Auditors' Report of the Treasurer's account was read, from which it appeared that the financial condition of the Society had greatly improved during the past year.

The ballot then took place, when Messrs. E. Shepherd, F. Smith, S. Stevens and S. J. Wilkinson were elected members of the Council, in the room of Messrs. T. Desvignes, F. J. S. Parry, W. Spence and J. F. Stephens; J. O. Westwood, Esq., was elected President; W. Yarrell, Esq., Treasurer; and J. W. Douglas and H. T. Stainton, Secretaries.

The President delivered an address on the state and prospects of the Society, for which a vote of thanks was passed, and he was requested to allow it to be printed. Votes of thanks were also passed to the retiring President, for his services for the last two years; also to the Treasurer, Secretaries and retiring members of the Council.

February 3, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

M. Motchulsky was present as a visitor.

The President returned thanks for his election and delivered an inaugural address, in which he impressed upon the members, and more particularly the younger ones, the claims that Entomology has upon its votaries as a science, under the different heads of "Descriptive Entomology," "Anatomy of Insects," "Investigation of the Natural History of Insects," and "The Natural Relations of Insects with each other." He also suggested for consideration, whether the Society might not be made a medium of exchange of British insects, on the plan adopted and successfully carried out by the Botanical Society of London.

The President appointed as Vice-Presidents, Messrs. Bond, W. W. Saunders and G. R. Waterhouse.

The following donations were announced, and thanks ordered to be given to the donors: 'Memoires de la Société Royale des Sciences de Liege, tome 6,' being 'Revue des Odonates ou Libellules d'Europe;' par M. C. de Selys-Longchamps. 'Monographia Cassididarum,' auctore Carolo H. Boheman, tome 1; both presented by Mr. Stainton. 'Entomologische Zeitung,' for December, 1850; by the Entomological Society of Stettin. The 'Zoologist' for February; by the Editor. A specimen of *Sirex duplex* and one of the *Tenthredinidæ*; by Mr. Lubbock. A collection of Indian insects, contained in twelve cases and in the finest condition; by — Grant, Esq., Elchies.

The President observed that the addition of this valuable donation of Mr. Grant's, made the Society possessor of the finest collection of Indian insects in Europe.

Major E. Sheppard, F.L.S., Bellefield House, Parsons Green, Augustus Sheppard, Esq., Bellefield House, Parsons Green, and J. McIntosh, Esq., Charminster, near Dorchester, were balloted for and elected members of the Society.

Mr. S. Stevens exhibited a new butterfly (*Thormantis Howqua*) Westwood MSS., and two specimens of the *Papilio Telamon* of Donovan, both recently taken by Mr. Fortune, in the north of China.

The President remarked that the last species was especially interesting, although the specimens were in bad condition, for no example had been seen since the time of Donovan, and not one was known to be now in existence; and the examination of these had shown that the species was not a true *Papilio*, but formed a new genus between *Thais* and *Teinopalpus*.

Mr. Saunders exhibited some Lepidoptera from Brazil, remarkable for the great size of their projecting palpi, simulating the appearance presented by the peculiar legs of the genus *Polypogon*.

The President exhibited some galls found on vines, sent to him by Sir O. Mosley, Bart. No insect had yet been reared from them; indeed in many that he had examined, no insect was present, but in one he had found a larva which appeared to belong to a species of *Curculionidæ*.

Mr. Douglas and Mr. Stainton exhibited some twigs of yew, from Mickleham and Worksop, in which the growth had been stopped, and the agglomeration of the terminal leaves had caused the formation of a knob about the size of a hazel-nut. In some of these a small lepidopterous larva had been found, which was probably the cause of the arrested development: and Mr. Douglas adverting to a conversation about the food of *Ditula angustiorana* which took place on the 4th of February, 1850, at this Society's meeting, suggested that these might be the larvæ of that species of *Tortricidæ*.

Mr. Stainton mentioned that during the past week he had seen in the seed-vessels of common furze, fully developed specimens of *Oxystoma Ulicis*, apparently waiting until their cells should open.

Mr. Lubbock exhibited some small globular nests, apparently of a spider, attached to stems of grass, but they were untenanted.

Mr. Douglas exhibited a somewhat singular nest, found last week at Mickleham, on the ground, formed between leaves still attached to the twig of beech on which they had grown, and the architect, a spider, accompanied it.

Mr. Stainton exhibited a small bunch of evergreen oak, the leaves on which were mined by the larvæ of a *Lithocolletis*, observing as a fact he had noticed, that *Lithocolletis* larvæ feeding on the leaves of deciduous trees, passed the winter in the pupa state, but in evergreens, they remained larvæ until the spring.

Mr. W. W. Saunders read a memoir 'Upon the Insects injurious to the Cotton Plant,' of which the following is an abstract.

"Having had my attention called to the insects injurious to the cotton-plant, I have been seeking for information from a variety of sources, but discover with surprise that the insects in question have been but very little studied, although it is evident from the published accounts of their ravages, the amount of loss to the planter must at times be very great. The particulars which have hitherto appeared regarding the cotton-moth, cut-worm or grub, cotton-bug, *Apate monochus* or bore-worm, will be found in Porter's 'Tropical Agriculturalist,' and Dr. Ure's 'History of the Cotton Manufacture,' but the information is very unsatisfactory and entirely wanting in that

correctness of detail so necessary to the entomological enquirer, and which if fully developed might lead to some satisfactory method of diminishing if not preventing the injuries caused by these destructive insects.

More positive information is to be obtained on the following insects, and in treating on these I will place them in two divisions.

The first, containing the species which have already been described; and the second, such only as are for the first time brought forward as injurious to the cotton-plant.

In the first division may be mentioned,

PHALENA OBLINITA, *Abbot and Smith's Insects of Georgia*, Pl. 94, p. 187.

The caterpillar feeds on the cotton and other plants, and the moth appears in April.

Found in Virginia and Georgia.

DEPRESSARIA GOSSYPIELLA, *Ent. Trans.*, vol. iii. p. 284.

Very destructive to the American cotton grown at Broach, in the East Indies, but seldom affecting the native cotton. The larva feeds on the cotton-seed until the pod is about to burst.

In the second division I have to enumerate,

ARCTIA HORSFIELDII.

Expansion of the wings 1 inch 10 lines. Anterior wings purplish ashy gray, with several abbreviated obsolete, wavy, dark gray strigæ, parallel to the hinder margin, and a more defined zigzag, dark gray line near the base, and with an elongate reniform mark on the disk beyond the middle: posterior wings brownish orange, gradually changing to purplish gray, marked on the disk with a dark gray spot, and with radiating lines of the same colour.

The larva is yellowish white, covered with long cream-coloured hairs. The joints of the body, each crossed above with an ash-gray lunulate spot, and a round, rather large black spot on the upper side of the third joint.

Feeds on the *Gossypium herbaceum*, *Lin.*, a native of Java; appears in the month of August, according to Dr. Horsfield.

EUDIPTES INDICA.

Expansion of the wings 10—12 lines. Anterior wings hyaline, with a broad, dark brown band along the costa and hinder margin, the band rather widening as it approaches the anal angle: posterior wings hyaline, with a band of the same width and colour as on the anterior wings along its hinder margin, gradually tapering as it approaches the anal angle.

Larva smooth, pale grass-green, with the head yellowish.

Feeds on the *Gossypium herbaceum*, and on the *Corollodendron*, common in Java from January to April, according to Dr. Horsfield.

This species is nearly allied to *Pyalis hyalinata*, *Lin.*, but is nevertheless quite distinct.

Three other species of insects attack the cotton plants in the East Indies, and cause serious injury, *viz.*,

The larva of some beetle, probably of the family of the Chrysomelidæ. An Aphis, for which I propose the name *A. Gossypii*; and the immature state of a Homopterous insect, probably related to the family Cercopidæ.

I trust that this notice, imperfect as it is, may be of some use as a first step towards a history of the insects injurious to the cotton-plant, and may bring the important subject to the notice of entomologists, who have opportunities of witnessing the ravages committed by insects on the cotton-plant, and induce them to record their observations, with a view of furnishing materials for a more complete investigation of the subject hereafter."

The paper is accompanied by a plate.

The President announced that in addition to the donation of lithograph copies of the portrait of the late Rev. W. Kirby, for the 'Transactions,' Mr. Spence had placed fifty copies at the disposal of the Council, who have determined to offer them to members and subscribers at one shilling each.

The President also said he had been requested to announce that Mr. Foxcroft intended to visit Wales this year, on an entomological expedition, for which he solicited subscriptions, to be repaid by his captures.—*J. W. D.*

Proceedings of the Microscopical Society of London.

January 15, 1851.—DR. ARTHUR FARRE, President, in the chair.

A paper 'On the Femoral Plates or Scales of *Zootoca vivipara*, a kind of Lizard,' by J. B. Spencer, Esq., was read.

After some introductory remarks, in which the description given by Professor Bell in his 'History of British Lizards' was noticed, as stating that this lizard was one of those distinguished by being covered with scales or plates, some of which possess a very curious structure, and among which the femoral plates are particularly distinguished as having pores, the use of which is not known; the author went on to state that these femoral plates occur in a single row on the under surface of each lower leg, and are usually ten or twelve in number. He, however, found upon examination, that they did not agree with Prof. Bell's description, not being perforated, but on the contrary their surface was produced into a semitransparent process or horn, of a light yellow colour, without any discoverable perforation; these last, where they occur, being due to the rubbing off of the horny process, which is detached by a very slight touch. He was, therefore, induced to believe that these scales possibly serve to give the creature a greater mechanical power of adhesion in certain cases. A drawing illustrating the size and position of the plates was also exhibited.

Mr. Quekett then directed the attention of the Society to an observation of a somewhat similar nature to that of Mr. Spencer, which he had made about ten years since, in the structure of the skin of a viviparous blenny (*Zoarcus viviparus*). In the

description of the skin of this fish, Mr. Yarrell states that "the surface of the body appears, under a lens, to be studded with circular depressions;" it was found, however, that these circular depressions, which are always of a white colour, were due to the presence of small round scales, about one-twelfth of an inch in diameter, each having a minute black spot; these are situated deep in the cuticle, like those of the eel, and, in some situations, occurred at certain tolerably regular distances.

Mr. Quekett afterwards spoke of what appeared to him, a new fact in vegetable physiology, *viz.*, the unrolling (in a spiral manner) of the membranous wall of an elongated cell. The specimen from which the hair or hairs were taken, was the fruit of *Cycas revoluta*, from China. Upon detaching some of these hairs, which are situated on two opposite parts of the fruit, and examining them with a power of 250 diameters, two varieties were distinctly visible, *viz.*, perfect hairs, having both extremities more or less pointed, and others, in which the extremity attaching them to the seed was abruptly broken off: when these last were carefully examined, the broken ends were, in most cases, found unrolled, in a spiral direction; the spiral being in the form of a band, the breadth of which gradually increases from below upwards. In these hairs there was no trace whatever of a spiral fibre, the membrane forming the wall being quite transparent and free from structure. Now, in most of the works on botany, no mention is made of the manner in which vegetable membrane is capable of being torn. Dr. Lindley, however, in the last edition of his 'Introduction,' states that it generally tears irregularly, but that in *Bromelia nudicaulis* the torn edges are curiously toothed; but no instance is given in which the fractured portion is always in a spiral form. It was on this account the subject was brought before the notice of the Society.

Mr. Quekett then brought forward a curious instance of malformation in the spicula, both of the body and of the gemmules, of *Spongilla fluviatilis*. The specimen in which the spicula occurred, was found by Mr. Spencer, in the neighbourhood of Blackheath, and the drawings were made by Mr. Leonard, from two objects, one belonging to the Society, the other in the author's possession, both of which were prepared by Mr. Spencer, from the sponge in question. Some of the long spicula from the body, which were of the form termed by Mr. Bowerbank, 'biarcuate,' were curiously altered, some having portions of the shaft dilated into round nobs at different distances, whereby a moniliform appearance was produced, others having portions of spicula projecting from their sides, whilst in some few instances, a series of half spicula were developed from the central portion of the shaft in the form of a whorl. Amongst the spicula of the gemmules some few were found in their normal, *viz.*, birotulate state; but in the majority of instances, either one or both extremities were strangely malformed. Sketches of the principal varieties, made by means of the camera lucida, were sent round for inspection.—*J. W.*

Notes on the Turnstone and Tern.

By the REV. JAMES SMITH.

IN a country like our own, where the population is so numerous, where cultivation has made such rapid and extensive progress, and where everything is, more or less, of a conventional and an artificial character, there is not the same opportunity nor the same facility for watching and describing the habits of animals, as there is in those regions where the landscape exhibits in every probability almost the identical features which it did when it was finally traced out by the hand of the Creator; where the forest rears itself in primeval magnificence; where the vegetation is rank and luxuriant; where the marsh with its aquatic herbage extends for miles upon end; where the sandy desert is not without its peculiar tenants; where the prairie stretches its wide expanse of sea-like undulations; where the wave breaks on rocks and shingles which have been seldom pressed by the human foot; and where man has either not made his appearance at all, or has yet to contend with the inferior animals for the sovereignty of the scenes around him. On this account it would scarcely be reasonable to expect that a work on natural history should make its appearance among ourselves of the same racy freshness, and with the same accumulation of interesting facts, as delight us in the writings of such men as Wilson, Audubon, and we will add Azara, Levaillant and Water-ton; and as lead us on so willingly, and sometimes so unconsciously, from page to page and from subject to subject. But, although in this respect much cannot now be perhaps effected in our own country, it is nevertheless conceived that, by those who have the leisure, the inclination, and above all the necessary enthusiasm and talent, more might yet be done even in it than has been hitherto accomplished. It is a reproach which frequently, and as it should seem not altogether without reason, has been cast upon British writers on natural history, that properly speaking, they ought, in a majority of cases, to be looked upon as compilers much more than as independent and original observers. When we narrowly examine the publications which have appeared in Britain during the course of the last hundred years, on the various branches of natural history, we shall be indeed surprised to see that, numerous as they are, there is but little in most of them that can be accounted as new and additional; and that to a great extent, each successive writer has borrowed from those by whom he has been preceded, merely communicating to facts, or supposed facts,

which have been brought forward over and over, the peculiar form and tinge of his own descriptive faculties.* In natural history, more-

* Among the exceptions to these remarks must be reckoned Mr. Selby's work on British Ornithology. He is without doubt an original and painstaking observer; and has contributed many important particulars in regard to the habits and appearances of our native birds which were previously unknown. As a philosophical naturalist, his merits are of a very high order. To him, in a great measure, would the praise appear to belong of being one of the most influential in having given to natural history, especially ornithology, that fresh and more rational impulse which began perhaps about thirty years ago; and which since that time has been every year advancing with accelerated speed and with corresponding success. As an artist, also, his labours have been brilliant and persevering. He and Sir William Jardine have been the means in this respect of bringing more numerous and more varied representations of new, rare, and interesting birds before the public, than perhaps any other two individuals of the present day.

In the preface to his first volume, Mr. Selby, when speaking of *style*, has the following remark: "I have endeavoured, as far as lay in my power, to unite conciseness and perspicuity, with *that plain didactic manner* in which I conceive all works on scientific subjects should be written." On such a point, I would be understood to differ from so eminent an authority with much of diffidence, and with a feeling that I am in all probability in the wrong. I cannot help thinking, however, that the character of style which is here recommended, although imperatively called for in works of severe and demonstrative science, ought not to be rigorously insisted upon, nor to be regarded as the only one which is proper, in publications having for their object the various branches of natural history. Is it not possible, in productions of this description, to be eloquent, and it may be even poetical, and at the same time correct and strictly accurate in the description of character, instincts and habits? May not the precision of science and the colouring of feeling occupy each their appropriate place, without the one interfering with the other, but on the contrary, like the masses of light and shade in a painting, mutually contributing to the beauty, the harmony, and the effect of the whole? Is it not in the happy intermixture of these opposite qualities that the irresistible charm principally lies which has made the writings of Wilson, of Audubon, and of others of a kindred character, to be so greatly sought after, and to be devoured with so insatiable avidity by their numerous and constantly increasing readers?

The name of Sir William Jardine has been casually mentioned; and no one who is familiar with his writings will hesitate for a moment in allowing that he is no mere compiler, but a most diligent, enthusiastic, and successful observer. He is not inattentive to the respective merits of systems; to anatomical details; to the adaptation in structure of means to ends, and to those interesting links by which groups glide, as it were, imperceptibly into each other. But he is a sportsman as well as a naturalist; and in the former capacity he has opportunities, which he seems never to neglect, of watching and of noting the habits and the movements of the feathered and also of the finny tribes. He has, moreover, an eye for the beauties of Nature. His descriptions are thus, generally speaking, not only accurate and original, but they are likewise fresh, vivid, and not unfrequently with a tinge of poetry. As examples of what has been said, may be mentioned the respective accounts in his 'History of

over, as in every branch both of literature and science, there are certain names which have obtained a great, and, what is very likely, a justly merited ascendancy. These are regarded as authorities in the domain with which they are respectively connected. To the opinions and the statements which they have put forth, there are attached the weight and the imagined infallibility of an oracle. Upon the minds of many who delight in the works of Nature, authorities such as these would seem to have the power of an appalling and ever present phantom. They exercise over them an influence, in consequence of which it might almost appear as if they were deprived of the free and the unfettered use of their senses. The feeling from which a condition like this arises, is no doubt to a certain extent commendable ; but when it is carried to the excess of which we are speaking, it is productive of the most serious disadvantages, and is even a formidable drawback to the progress of literature and especially of science. There are more individuals than we should be inclined to believe, who are unwilling to make public either what they think, or what they have seen and heard, principally, if not entirely, from a fear lest their reflections and their statements should be at variance with those which have been put on record by the authorities to whom we are referring, and which, in consequence, have come to be regarded as fixed and undoubted truths that are not for a moment to be called in question. And it cannot but be acknowledged that for such a fear there are pardonable grounds. For it would appear to be with many a sort of

British Birds,' of the blackcock, the rock dove, the oyster-catcher, the lapwing, the dunlin, the common sandpiper, the green sandpiper, and the sketch which is given in the introduction to his last volume, of a flat, sandy, and oozy coast, and which is perhaps drawn from what is to be witnessed on the Solway Firth. As evidence that he has the eye of a painter and the feeling of a poet, take his note on the curlew as the bird is seen and heard in a misty morning of spring. (Edit. of Wilson's 'American Ornithology,' vol. iii. p. 44). The greatest objection which may be made to his writings is perhaps a not unfrequent want of precision and even of accuracy in his style.

It would probably be impossible to bring forward a more striking proof of the amazing changes and improvements which have taken place in this country, than the difference between those avocations in which Sir William Jardine finds to-day his delight, and those which formed the pursuit of his steel-clad ancestors, when their principal excitement was in all likelihood the Border foray, and when the motto of the family '*Cave adsum,*'—'*beware, I am at hand,*'—was no doubt singularly appropriate, and, as it fell on the ear of the Southron, might well make him bestir himself for the safety of his possessions.

maxim, that when an obscure and unheard-of observer takes it upon him to call in question statements which have long passed current in grave and authoritative books, the circumstance is almost evidence in itself, that such an individual is incompetent to look upon the fair volume of creation with accuracy and discrimination, or with advantage either to himself or to others. So greatly, indeed, is this the case, that writers on natural history who sit in their closet, who concern themselves principally with the artificial arrangements, with the nomenclature, and with the general technicalities of science, and who in person seldom investigate the habits of those animals, the skins and the anatomical structure of which they examine, it cannot be denied, with much learning and with many most important results, are not unfrequently inclined to look with distrust upon the representations of those who spend their leisure hours in the fields, on the moor, by the margin of the lake, in the recesses of the wood, or on the sands and the precipices of the coast; who have patiently and narrowly watched the animated beings by which these different localities are enlivened; and who derive an unceasing pleasure from ascertaining, with all the minuteness and accuracy of which they are capable, the instincts and the movements of the lower creation. Statements put forward by such individuals as the fruit of their anxious and oft repeated observation, are almost always received with suspicion, and sometimes even as mere invention, when they happen to be contrary to what has been advanced by the reigning authorities, or when they are such as have never been previously noticed or heard of. In such circumstances, it is considered as at the very least far more probable that observers, who are of no reputation in science, and whose names are probably altogether unknown, should have been mistaken, in spite of all that they may assert as having been seen with their eyes and heard with their ears, than that representations which have stood the test of time; which have been copied from book to book; and which, for a lengthened series of years, have never once been contradicted, should nevertheless turn out to be inconsistent with truth, and to be opposed to actual and existing facts. And yet it may, notwithstanding all this, be safely affirmed that there are few things more certain than that every one who has eyes to see, ears to hear, and a reasonable portion of intelligence, and who is resolute in the exercise of his faculties, not, indeed, in the spirit of self-conceit and of arrogance, but of respectful independence and becoming firmness, will be enabled much sooner than he imagines, and to the surprise perhaps of

no one so greatly as of himself, to detect mistakes, to rectify misapprehensions, to point out errors, and to communicate new and interesting particulars in regard to a variety of objects.

I have been led into these remarks, which I willingly admit are of very common-place character, in consequence of the following communications from Mr. Thomas Edward, Banff. They confirm so far, in my humble opinion, what I have ventured to say in regard to additional facts being yet in store, even in this country, for those who will observe for themselves, and with conscientious diligence, minuteness and patience. The first refers to the turnstone (*Streptilas Interpres**), a bird which, in this part of the kingdom at least, is by no means of frequent occurrence, and of the habits of which, a fuller and more satisfactory account has been given by Audubon than by any European ornithologist with whose writings I am acquainted.

“Passing along the sea-shore to the west of Banff, I observed on the sands at a considerable distance before me, two birds beside a large-looking object. Knowing by their appearance that they did not belong to the species which are usually met with in this quarter, I left the beach and proceeded along the adjoining links, an eminence of shingle intervening, until I concluded that I was about opposite to the spot where the objects of my search were employed. Stooping down, and with my gun upon my back prepared for action, I managed to crawl through the bents and across the shingle for a considerable way, when I at length came in sight of the two little workers, who were busily endeavouring to turn over a dead fish which was fully six times their size. I immediately recognised them as turnstones. Not wishing to disturb them, anxious at the same time to witness their operations, and observing that, a few paces nearer them, there was a deep hollow among the shingle, I contrived to creep into it

* The generic name ‘*Streptilas*’ is evidently from the Greek word ‘*strepsis*,’ ‘the act of turning;’ and it alludes happily enough to the habit which the bird possesses of turning stones over with his lever-like bill when it is searching for its food. Of the reason, however, which induced Linnæus, by whom it seems to have been first imposed, to adopt ‘*interpres*’ as the specific name of the turnstone, I am unable to find any explanation. I have read over with some care the article ‘*Interpres*,’ in the Latin Lexicon of Facciolati, and the meanings there given to the word in English are ‘mediator, umpire, arbitrator, referee,’ and as the most general, ‘interpreter.’ In what manner any of these meanings can have a reference to the turnstone, as to its systematic arrangement, its structure or its economy, it is beyond my ability to see. In his scientific nomenclature, Linnæus would seem at times to be capricious, not to say whimsical.

unobserved. I was now distant from them but about ten yards ; and had a distinct and unobstructed view of all their movements. In these, there was evinced that extraordinary degree of sagacity and perseverance, which comes under the notice only of those who watch the habits of the lower creation with patience and assiduity, and which when fully and accurately related, is not unfrequently discredited by individuals, who, although fond of natural history, seem inclined to believe that everything in regard to animals must necessarily be false, or at least the result of ignorance, unless it has been recorded in books which are considered as of authority on the subject. But to return : having got fairly settled down in my pebbly observatory, I turned my undivided attention to the birds before me. They were boldly pushing at the fish with their bills and then with their breasts.* Their endeavours, however, were in vain : the object remained immovable. On this they both went round to the opposite side, and began to scrape away the sand from close beneath the fish. After removing a considerable quantity, they again came back to the spot which they had left ; and went once more to work with their bills and

* It is consistent with my knowledge that Mr. Edward has never read the account given by Audubon of the habits of the turnstone. I mention this as a proof, among others, of the accuracy and minuteness with which he makes his observations. He is the only European, so far as I have the means of ascertaining, who has described the efforts which are put forth by the bird in question in cases of difficulty, not only with its bill, but with its breast also. This interesting particular in its economy had been already taken notice of, although unknown to him, by the celebrated woodsman of America. These are his words : " In several instances when the clusters of oyster-shells or clods of mud were too heavy to be removed in the ordinary way, they (the turnstones) would use not only the bill and head, but also the breast, pushing the object with all their strength, and reminding me of the labour which I have undergone in turning over a large turtle." (Audubon's 'Ornithological Biography,' vol. iv. p. 32). It would not appear that much was known by Wilson in regard to the turnstone ; for contrary to his usual practice, instead of giving a full and graphic account of its character and habits, he has presented us with a minute, although no doubt an interesting description of the horse-foot, or great king crab (*Monoculus Polyphemus*), on the eggs or spawn of which it seems that the turnstone feeds whenever it can, devouring them with the greatest avidity. (Wilson's 'American Ornithology,' Sir W. Jardine's edit. vol. ii. p. 325). Audubon is of opinion that in the system of nature the turnstone should be placed very near to the oyster catcher (*Hematopus Ostralegus*), as in their avocations, especially in the grand object of procuring their food, there is a close resemblance between them. We observe that in the arrangement of Selby, one of the most judicious, accurate, and observant of our native ornithologists, the turnstone occupies the place immediately following that of the oyster catcher. ('British Ornithology,' vol. ii. p. 202).

breasts, but with as little apparent success as formerly. Nothing daunted, however, they ran round a second time to the other side, and recommenced their trenching operations with a seeming determination not to be baffled in their object, which evidently was to undermine the dead animal before them, in order that it might be the more easily overturned. While they were thus employed, and after they had laboured in this manner at both sides alternately for nearly half an hour, they were joined by another of their own species, which came flying with rapidity from the neighbouring rocks. Its timely arrival was hailed with evident signs of joy. I was led to this conclusion from the gestures which they exhibited, and from a low but pleasant murmuring noise, to which they gave utterance as soon as the new comer made his appearance. Of their feelings he seemed to be perfectly aware, and he made his reply to them in a similar strain. Their mutual congratulations being over, they all three fell to work; and after labouring vigorously for a few minutes in removing the sand, they came round to the other side, and putting their breasts simultaneously to the fish, they succeeded in raising it some inches from the sand, but were unable to turn it over. It went down again into its sandy bed, to the manifest disappointment of the three. Resting, however, for a space, and without leaving their respective positions, which were a little apart the one from the other, they resolved, it appears, to give the matter another trial. Lowering themselves with their breasts close to the sand, they managed to push their bills underneath the fish, which they made to rise to about the same height as before. Afterwards, withdrawing their bills but without losing the advantage which they had gained, they applied their breasts to the object. This they did with such force and to such purpose, that at length it went over, and rolled several yards down a slight declivity. It was followed to some distance by the birds themselves, before they could recover their bearing. They returned eagerly to the spot from whence they had dislodged the obstacle which had so long opposed them; and they gave unmistakable proof, by their rapid and continued movements, that they were enjoying an ample repast as the reward of their industrious and praiseworthy labour. I was so pleased, and even delighted, with the sagacity and the perseverance which they had shown, that I should have considered myself as guilty of a crime had I endeavoured, on the occasion, to take away life from these interesting beings, at the very moment when they were exercising, in a manner so happy for themselves, the wonderful instincts implanted in them by their great and ever merciful Creator. When they appeared

to have done and to be satisfied, I arose from my place of concealment. On examining the fish, I found it to be a specimen of the common cod (*Morrhua vulgaris*): it was nearly three feet and a half long, and it had been embedded in the sand to about the depth of two inches."

The second communication from the same individual is marked, if I mistake not, by a similar character to the first. It evinces great closeness, patience and minuteness of observation; and it brings interesting, and so far as I am aware, unrecorded facts to light in the character and economy of the bird to which it refers.

"Being on the sands of Boyndie one afternoon in the end of August, I observed several parties of pickietars* busily employed in fishing in the Firth.† As I was in want of a specimen of this bird I loitered about upon the beach, narrowly watching their motions, and hoping that some of them would come within the range of my gun. The scene around was of no common beauty. In the azure heaven not a cloud was to be seen as far as the eye could reach; and not a breath of wind was stirring the placid bosom of the Firth. The atmosphere seemed a sea, as it were, of living things; so numerous were the insects that hummed and fluttered to and fro in all directions. The sun, approaching the verge of the horizon, shot long and glimmering bands of green and gold across the broad mirror of the deep. Here and there were several vessels lying becalmed, their whitened sails showing strongly in the vivid light. An additional interest was imparted by the herring-boats which were congregating in the bay: their loose and flagging sails, the noise of the oars, and the efforts of the rowers, told plainly enough that a hard pull would have to be undergone before those particular localities were reached where operations were to be commenced against the finny tribes. While I stood surveying with delight the extended and gorgeous prospect, and witnessing with admiration the indefatigable evolutions of the terns in their search for food, I observed one of them break off from a party of five, and direct his course towards the shore, fishing all the way as he came. It was an interesting sight to behold him as he approached in his flight, at one moment rising and at another descending, now

* This is the trivial name given along the coast of the Moray Firth to the most common species of tern which is there to be seen. I am unable, however, positively to say whether this is the so-called common tern (*Sterna Hirundo*), or the Arctic tern (*Sterna Arctica*).

† It is the Moray Firth that is here spoken of.

poised in mid-air, his wings expanded but motionless, his dark piercing eye directed to the waters beneath, and watching with eager gaze the movements of their scaly inhabitants; and now, as one of them would ever and anon come sufficiently near to the surface, making his attack upon them in the manner so thoroughly taught him by nature. Quick as thought he closed to his side his outspread pinions; turned off his equilibrium with a movement almost imperceptible; and with a seeming carelessness, threw himself headlong into the deep with so great rapidity that the eye could with difficulty keep pace with the descent. In the least space of time he would be seen sitting on the water, and swallowing his prey. This being accomplished, he again mounted up into the air. He halts in his progress. Something has caught his eye. He lets himself down; but it is only for a little way, for his expected prey has vanished from his sight. Once more he soars aloft on lively wing; and having attained a certain elevation, and hovering kestrel-like for a little with quick repeated strokes of his pinions, he rapidly descends. Again, however, his hoped-for victim has made its escape; and he bounds away in an oblique direction, describing a beautiful curve as he arises without having touched the water. Back he came to the very same spot, chagrined as it would seem at his disappointment, and instantly made a plunge. Immediately, however, he emerged again, having been unsuccessful in his dive.* Soon after he winged his way nearer and nearer to the beach: onwards he advanced with zigzag flight, when suddenly, as if struck down by an unseen hand, he dropped into the water within about thirty yards of the place where I was standing. As he righted and sat on the bosom of the deep, I was in this manner enabled distinctly to perceive, that he held in his bill a little scaly captive which he had snatched from its home, and which struggled violently to regain its liberty. Its struggles were in vain: a few squeezes from the mandibles of the bird put an end to its existence. Being now within my reach, I stood prepared for the moment when he should again arise. This he did so soon as the fish was despatched. I fired, and he came down with a broken wing, screaming as he fell into the water. The report of the gun together with his cries brought the party which he had left, in order that they

* The tern is by no means uniformly successful when it makes a plunge into the water. This I have ascertained from having dissected one which I killed early in the morning, after having seen him make five successive plunges. There was nothing in his stomach save two *sanlins*, that is, two young sandeels (*Ammodytes Lancea*). These were entire, being only a little bruised.

might ascertain the cause of the alarm. After surveying their wounded brother round and round, as he was drifting unwittingly toward the shore with the flowing tide, they came flying in a body to the spot where I stood, and rent the air with their deafening screams. These they continued to utter, regardless of danger and of their own individual safety, until I began to make preparations for receiving the approaching bird. I could already see that it was a beautiful adult specimen; and I expected in a few moments to have it in my possession, as it was now not far from the water's edge. While matters were in this position, I beheld to my utter astonishment and surprise, two of the unwounded terns take hold of their disabled comrade, one at each wing, lift him out of the water, and bear him out to sea: they were followed by the other two. After being carried about six or seven yards, he was let gently down again, when he was taken hold of in a similar manner by the two who had been hitherto inactive. In this way they continued to carry him alternately, until they had conveyed him to a rock at a considerable distance, upon which they landed him in safety. Having recovered my senses I made toward the rock, wishing to obtain the prize which had been so unceremoniously snatched almost from my very grasp. I was observed, however, by the terns; and instead of four I had in a short time a whole swarm about me. On my near approach to the rock, I once more beheld two of them take hold of the wounded bird as they had done already, and bear him out to sea in triumph, and far beyond my reach. This, had I been so inclined, I could no doubt have prevented. In the circumstances, however, my feelings would not permit me; and I willingly allowed them to perform without molestation an act of mercy, and to exhibit an instance of affection, which man himself might not be ashamed to copy. I was, indeed, rejoiced at the disappointment which they had occasioned, for they had thereby rendered me witness to a scene which I could not have previously imagined, and which no length of time will efface from my recollection."

JAMES SMITH.

Manse of Monquhitter by Turriff, Aberdeenshire,
March 6, 1851.

Notes on Observations in Natural History during a Tour in Norway.

By the REV. ALFRED CHARLES SMITH, M.A.

(Continued from page 3044).

The Black Guillemot (*Uria grylle*). I had been wandering about from point to point of the splendid Sogne Fjord, and after a fortnight's excursion amidst its beauties, was returning to Lairdalsoren, where we had left our carriages and ponies. I generally sat or rather reclined on a heap of boughs, after Norwegian custom, at the head of the boat, with my double-barrelled gun in my hand, ready for any strange fowl. As we came over this fjord on leaving Lairdalsoren, the rough weather prevented my using my gun: at times our six oars could hardly make any way; at other times, as we shifted our course, and our men could make the wind at all available, up went the sail, and we scudded along at a great pace, not without some danger, owing to the sudden gusts which would almost lay the boat on her side, while she was half filled with water: our men shouting and singing and roaring with delight, when, on coming opposite a fresh gully, a stronger gust than before would catch our sail and drench us to the skin: however, notwithstanding their merriment at the wind, they always took care to hold the sail in their hands, and never to tie it down; in order that they might instantly let it go when the gust came: as, had we been capsized, we should have had but little chance, the rocks rising up so perpendicularly from the fjord, as to afford no ledge for landing, not even an inch of projecting rock to seize hold of. But the day of our return was very different; not a breath of air to create a ripple on the water, and our poor boatmen obliged to toil at their oars for eight hours under a burning sun. It was on rounding a point which disclosed fresh beauties in this glorious fjord, that we came within shot of the black guillemot: he gave a great deal of sport, but a great waste of powder and shot, which are valuable commodities in Norway, as there are very few places where the former can be obtained fine enough to suit an English nipple, and all the shot comes from England. However, to proceed with the guillemot: the first shot wounded him, but so little, that though he could not fly, he could dive (which he did the instant he saw the flash of the gun), and when he came up again, after about two minutes, he was generally out of shot. However, by watching the ripple as he went under, we could generally see the direction he had taken, and by hard pulling

in that direction, frequently got a shot at him as he rose to the surface; when in an instant, his beautiful bright red legs were thrown up and under he went, and so eluded our pursuit for a long time, till a more successful shot went through his head, and laid him dead upon the water.

The Redthroated Diver (*Colymbus septentrionalis*). This bird is very common in Norway, and may be seen on most of the lakes and fjords, with which that country abounds. I saw many of them, both on the inland fresh-water lakes, and on the salt fjords: in the latter, however, they seem to get high up towards the extreme ends of the fjord, far into the interior of the country, and many miles from the sea: here the fjord becomes much like an inland lake, and as large streams and torrents pour their waters into it on every side, and especially at the extreme end of every arm, these waters have so great power over the sea-water, that the fjords at their heads (though still branches of the sea), have no taste of salt whatever in their waves: here, and in the inland lakes the redthroated diver retires to breed. I brought home several skins; and I saw them sailing about on their lakes, or flying over the water, with their long necks outstretched, and with a wailing scream, many times; and I can add my testimony to that of others, that I never saw one throughout the summer without the dark red throat.

The Blackthroated Diver (*Colymbus arcticus*). I saw this beautiful diver several times; generally on the lakes which are to be found on the mountain plateaux: nothing can exceed the dreariness and coldness of these high mountain lakes; they never seem at any time in the summer to be secure from snow, and frost, and ice, and cold biting winds. The blackthroated diver alone seems to prefer the solitude and wildness of these lakes to those which are lower down the mountains: here, too, they are seldom disturbed, or even seen by man. They are magnificent birds, and swim backwards and forwards upon the lake, of which they have taken possession, with great stateliness and dignity, becoming their rank as "monarchs of all they survey," a right which we may conclude no one is likely "to dispute." The Laps are very fond of ornamenting their dresses and tobacco-pouches with the feathers of this bird and of its congener the redthroated diver. I bought a small bag or pouch made of rein-deer's skin, which these Laps had tanned for themselves, and ornamented with tufts of feathers from these birds.

The Bohemian Waxwing (*Bombicilla garrula*). From frequent inquiries of curators of Museums, and others who made natural his-

tory either their business or their pleasure, I ascertained that the Bohemian waxwing is not considered a regular periodical visitor, as at some seasons he appears in considerable numbers, at others again not one is to be seen. Sometimes there is an interval of several years between the arrivals of these beautiful birds, and then (as in 1849 and again in 1850) they may come in very large flocks. I selected some specimens out of thirty skins of these birds, all of which had been knocked down in the Botanical Gardens of Christiania, by the son of the director, in 1849; but he told me, that previous to that year, not one had been seen, so far as he could ascertain, for many years, although of course in a country like Norway, extending over so vast a space (being about one thousand English miles in length, from the most southern point to the North Cape), and being so thinly peopled (the whole population not exceeding a million and a half, or only three-fourths of the population of London alone), we can easily conceive, that a very great number of strange birds may appear in various parts of the country, unnoticed by any one; and especially when we consider that, excepting in the three towns of Norway (Christiania, Bergen and Trondhjem), there are scarcely any persons, who from education, or leisure, or knowledge of the subject, would be likely to observe what unwonted birds made their appearance; still less, to make known such occurrences, did any strange birds thrust themselves upon their notice. I think I may safely say, the Norwegians are not likely to possess the advantage of such a publication as the 'Zoologist' for many a day to come.

The Magpie (*Pica caudata*). This bird, usually so shy in this country, and so difficult to approach within gunshot, seems to have entirely changed its character in Norway: it is there the most domestic and fearless bird: its nest is invariably placed in a small tree or bush adjoining some farm or cottage, and not unfrequently in the very midst of some straggling village. If there happens to be a suitable tree by the roadside, and near a house, it is a very favourite locality for a Norwegian magpie's nest. I have often wondered to see the confidence and fearlessness displayed by this bird in Norway: he will only just move out of your horse's way, as you drive by him on the road; and should he be perched on the rail by the roadside, he will only stare at you as you rattle by, but never think of moving off. It is very pleasant to see this absence of fear of man in Norwegian birds: it is shared very generally by the feathered tribes there, if we except the whole order Raptores: for these there is a premium, varying with the destructive powers of the bird; viz., for eagles, sixty skillings, or two

shillings and a penny: for owls and hawks, twenty-four skillings, or ten pence. Consequently it is as difficult to approach these wary birds in Norway as in England; but with respect to all other tribes there is none of that persecution, hunting, throwing of stones by idle boys, or otherwise molesting them, that we so invariably see in England. A Norwegian would never think of terrifying a bird for the sake of sport; whilst I fear to see such a bird as the magpie sitting quietly on a rail within a few feet, would be a temptation for assault to an English boy which he could not resist. I must add, however, with regard to magpies, that there is a superstitious prejudice for them current throughout Norway; they are considered harbingers of good luck, and are consequently always invited to preside over the house; and when they have taken up their abode in the nearest tree, are defended from all ill: and he who should maltreat the magpie, has perhaps driven off the *genius loci*, and so may expect the most furious anger from the owner of the neighbouring dwelling, whose good fortune he has thus violently dispersed.

ALFRED CHARLES SMITH.

Old Park, Devizes,
March 4, 1851.

(To be continued).

NOTICES OF NEW BOOKS (CONTINUED).

*The Naturalist.**

I should be acting in direct opposition to the principle I have always professed and always advocated, were I not to hail with a hearty welcome a natural-history periodical, the object of which is to supply "the wants of that numerous body of naturalists who are unable to indulge in the luxury of expensive works," and which therefore is published "at a price which will prevent no one being numbered among its supporters." This first number is well printed on good paper and is illustrated by seven woodcuts, all of them well

* The Naturalist, a Popular Monthly Magazine illustrative of the Animal, Vegetable and Mineral Kingdoms, with numerous engravings; conducted by Beverley R. Morris, Esq., A.B., M.D., T.C.D., Mem. Wern. Club. London: Groombridge.

executed, the size is royal octavo, and it contains twenty-four large and closely printed pages, and, finally, the price is only half that of the 'Zoologist.' From this statement it will, I think, be manifest, that the 'Naturalist' fulfils almost every condition at which I have for eighteen years been constantly aiming,—the rendering of natural history accessible to all: Dr. Morris has, moreover, in his directions to correspondents done me the honour to follow my own, and the contributions are arranged typographically almost exactly as in the 'Zoologist.' There can be no doubt that such a work is likely to interfere greatly with the sale of the 'Zoologist;' and thus that I shall be directly a sufferer by its publication: but how is it possible for me to urge this as an objection? How inconsistent with the professions and practice of my whole life, to say one unkind word, or entertain a hostile feeling on this account! Still, on the other hand, it would neither be fair nor truthful in me to conceal the fact, that *one* of the indispensable conditions of a good popular journal of natural history seems to me *not* to be fulfilled; and taking this first number as a fair sample of what the work is designed to be, I fear that the want of this indispensable condition will be fatal: however, there is no way so fair as letting a work speak for itself; and I therefore extract for my ornithological subscribers a few passages taken at random. I will not even state my objection, but leave my readers to draw their own conclusions. The especial attention of Mr. Doubleday, Mr. Yarrell, Mr. Gurney, Mr. Gould, Mr. Fisher, Mr. Hewitson, Mr. Bury, the Messrs. Matthews, Mr. Milner, Mr. Tomes, Mr. Heysham, &c., is requested to the subjoined extracts.

1. Female Cuckoo crying "cuckoo."

"In the summer of 1850, in the month of July, a hedge accentor constructed its nest in a holly-hedge, about two feet from the ground, and about fourteen from an adjoining garden-wall. Immediately on its being finished, and before the owner of it had time to deposit her second egg, a cuckoo, which had for some days past been watching with anxious eye the operations of the accentor, took the opportunity, during the temporary absence of the said hedge accentor, and quietly deposited in the nest her egg, which occupied but a few minutes, and immediately took her departure, uttering at the same time her well-known cry of cuckoo, cuckoo, in rapid succession to a neighbouring elm-tree."—Page 11.

2. Female Cuckoo feeding her young with *Abraxas grossulariata*.

"Taking my stand not at a great distance from the nest under the

wall alluded to, in a few minutes the old cuckoo flew over the wall to the nest; I immediately applied a pocket telescope to my eye and very distinctly saw the old bird feed its young. This operation I watched some time every day, creeping nearer and nearer till I could see distinctly the actual feeding of the young without the aid of telescope or spectacles. I now became anxious to know whence the bird procured its food, which I imagined from its frequent visits to the nest, was at no great distance, and of what description it was. Knowing the cuckoo to be particularly fond of caterpillars, I walked into the garden, where there were some gooseberry-bushes covered with caterpillars of *Abraxas grossulariata*; thither I bent my steps, and saw the cuckoo engaged in clearing the bushes of the caterpillars. When she had what she considered sufficient for that meal, off she flew in a direct line over the wall, and as if she had been shot, dropped on the other side, where the hedge in question was."—Page 11.

3. Dipper singing after it was shot.

"At the close of winter, or rather early in spring, whilst following the windings of a small stream in East Lothian, with my gun on my arm, I started a dipper, and sent a random shot after it. The bird appeared to be hit, but it flew on and at length settled on a stone about a hundred yards distant from me. Favoured by an intervening bank, I approached within a short distance of the spot; and never shall I forget the sweet warblings of that little throat as it murmured above the sound of the purling brook. My anxiety to procure a specimen caused me again to put up the bird, and I killed it on the wing; but when I came to examine the stone where it had been sitting, and found thereon several drops of blood, I was stung with remorse to think I had been the means of taking its life. Poor little dipper! it had actually been singing after receiving a death wound."—Page 13.

4. Great Black Woodpecker building in a brick wall.

"It is generally supposed by ornithologists that this beautiful bird is a straggler in Britain. This, however, is not the case, for I have known it to breed and rear its young in several instances at Claremount, in Surrey. On one occasion I was anxious to see the contents of the nest, which had been built in a hole in a brick wall. The brick had been destroyed from the effects of frost, and mouldered away. The bird had so completely replaced one of its own making of clay, with the exception of a small round hole for its use, it might have been passed by without being seen. My hand being much larger than the hole, and the clay having become so hard,

I was obliged to use a knife to make the hole large enough. Having satisfied myself I left the eggs. * * * * These birds, I am almost certain the same pair, made this hole their nest for three years."—Page 20.

5. Female Cuckoo singing.

"Between eight and nine one evening in June last, I saw a female cuckoo flying towards a plantation at Shenriers Bridge, near Totnes, Devonshire, where I had frequently heard her fine clear liquid notes, &c."—Page 22.

6. Martins killing a Sparrow.

"In the summer of 1849, a pair of martins built their nest in an archway at the stables of Woburn Abbey, Bedfordshire, and as soon as they finished building it, and had lined it, a sparrow took possession of it, and although the martins tried several times to eject him, they were unsuccessful, his hard beak being too formidable an obstacle for the tender beaks of the martins; but they, nothing daunted, left his lordship the sparrow in full possession, and then flew to scour the neighbourhood for help, returning in a short space of time with about thirty or forty martins, who went, or rather flew, in a body to the sparrow in the nest, and having dragged the unfortunate culprit out, took him to the grassplot opposite, called the circle, and there they all fell, pell mell, on him and killed him."—Page 23.

The other zoological papers are of a similar character, and should it hereafter prove that I am mistaken as to their value; should they really be received as sound additions to our knowledge of Nature's works; I shall only be too happy in having been the humble means of giving them greater publicity than they could obtain in the pages of a journal, which, whatever its ultimate destiny, cannot at present expect to rival my own in circulation.

EDWARD NEWMAN.

The Tinearist's Calender for April.—Referring my readers to the last volume of the 'Zoologist' (Zool. 2788), I have only to add to the species there enumerated, that the following should now be looked for. The larvæ of *Depressaria assimilella* and *atomella*, on broom, the latter species also on *Genista tinctoria*; the larvæ of *D. ulicetella* will probably be found in the shoots of the furze. The larvæ of *Coleophora albitarsella* on *Glechoma hederacea* (ground ivy), in narrow brown cases. The larva of *C. spissicornis*, I am informed, feeds on *Centaurea nigra*, that of the beautiful *Con-*

spicuellæ feeds on *Centaurea Jacea*. The larvæ of *Elachista Staintoni* will be found mining the leaves of *Helianthemum vulgare*, and a larva (probably that of *E. modestella*), feeds in the buds of *Stellaria Holostea*. The larva or pupa of *Lithocolletis trifasciella* will be found in the lowermost leaves of the honeysuckle shoots, and the larvæ of *L. Messaniella*, full grown towards the middle of the month, will be found in the leaves of the evergreen oak.—*H. T. Stainton; Mountsfield, Lewisham, March 12, 1851.*

Capture of Aepus Robinii in England.—My attention has been lately directed by Mons. Javet, to a second species of *Aepus*, which exists amongst the fulvescens of our British cabinets, and which has been clearly overlooked by collectors as that insect. Its characters, however, are very distinct, and there can be no doubt, when examined, of the validity of the species in question. It has, indeed, been but lately separated on the continent, and was described as *Aepus Robinii* (so named from Mons. Robin, who first discovered it on the sea-shore, at Dieppe), by M. Laboulbène, in the *Ann. de la Soc. Ent. de France*, vol. vii. (2ième série), p. 23. It is the only species that I have myself ever captured in England, having taken it under stones at the edges of the Chesil Bank, in May, 1848, on spots below high-water mark, when left dry by the sea's retreat. In similar situations M. Javet has captured it (in company with fulvescens), in the north of England. Its chief distinguishing characters consist in the shorter, and rather more consistent elytra, *dilated greatly* at the apex, and thus forming a striking contrast to the elongate, parallel form of fulvescens. The thorax also differs, as will be seen on inspection. There is an interesting account of its habits, with description of the larva, in the eighth vol. of the *Ann. de la Soc. Ent. de France*, p. 529, by M. Coquerel.—*T. Vernon Wollaston; 25, Thurloe Square, Brompton.*

Proceedings of the Zoological Society.

Evening Meeting, February 11, 1851.—W. YARRELL, Esq., V. P., in the chair.

Mr. Gray read a paper 'On a New Genus and New Family of Cyclosaurian Lizards,' which he characterized under the name of *Iphisadæ*. The type (*Iphisa elegans*) was obtained by Messrs Wallace and Bates, during their researches in the country adjacent to Pará.

Dr. Kaup communicated a paper 'On some New Birds discovered in the Museum of the Earl of Derby.' The species were characterized under the following names: *Nisus chionogaster*, *Harpagus circumcinctus*, *Saurophagus Derbyanus*, *Psaris maximus*, *P. Fraserii*, *P. parinus*, *Tyrannula mexicana*, *Todiramphus pectoralis*, *T. ruficeps*.

A paper communicated by Professor Owen, and entitled 'Contributions towards a Natural History of British Guiana, by G. R. Bonyan, M.D.,' was read in part. It contained an interesting account of the raptorial birds observed by the writer, amounting to about thirty species.

The Meeting adjourned to February 25.

Evening Meeting, February 25, 1851.—

Mr. Gould called the attention of the meeting to three hybrid birds which had been placed in his hands by Mr. Leadbeater, with a letter addressed to him concerning them, from Capt. Spicer, of Cottimore. Two of these hybrids were the produce of a hen golden pheasant and a male of the common species. The third was the produce of a hen pheasant of the common species and a black cock.

Professor Owen read a paper 'On the Anatomy of the female wart hog (*Phacochærus Æthiopicus*), recently living in the Society's Menagerie.'

Dr. Baird communicated a paper, by Dr. Nicholson, of Calcutta, 'On a New Species of Crustacean, discovered by him in the wells of that City, in 1846.'

Mr. Cuming communicated a paper by W. Metcalf, Esq., 'On New Species of Shells received by W. J. Hamilton, Esq., from Borneo.' They were characterized under the following names: *Helix nasuta, nobis*, *H. glutinosa, nobis*, *H. conicoides, nobis*, *Cyclostoma Borneensis, nobis*, *C. undatum, nobis*, *C. tenuilabiatum, nobis*, *C. biciliatum, nobis*, *Auricula subnodosa, nobis*, *Auricula polita, nobis*, *Melania circumstridata, nobis*, *M. subsuturalis, nobis*, *Paludina Hamiltoni, nobis*, *Cerithium unicarinatum, nobis*, *Novaculina olivacea, nobis*, *Cyrena triangularis, nobis*.

The meeting adjourned to March 11.

Monthly General Meeting, March 6.—RIGHT HON. SIR GEORGE CLERK, Bart., M.P., V.P., in the chair.

Mrs. Remington and E. Robins, Esq., were elected Fellows. W. W. Rawlins, Esq., and G. M. Fast, Esq., were proposed as candidates for the Fellowship.

The Report of the Council stated that the number of visitors to the Gardens since the first of January, presented an increase of 7422 over the corresponding period of last year. The additions to the menagerie during the month of February, included a Burchell's zebra, Guanacos, Rusa deer, a sloth, a Stanley crane, and three specimens of the Jerooftee (*Perdix pondicerianus*). The latter birds were presented by Mr. Keith Abbot, Corr. Mem. Z. S., who brought them with him from Persia, expressly for the Society. Several extensive buildings are in progress at the Gardens, and will be completed in the early part of April.

March 11, 1851.—J. E. GRAY, Esq., F.R.S., in the chair.

Mr. Gould exhibited a drawing of a new species of Phytophaga, made from a living specimen which had been for nearly twelve years in the possession of Lady Rosse, at St. Helena, to which island it had been brought from the west coast of Africa. The name proposed for this bird, by Mr. Gould, was *P. Rossiaë*.

The Secretary resumed and concluded the reading of Dr. Bonyan's paper 'On the Raptorial Birds of British Guiana.'

Mr. Newman communicated a paper, entitled 'Some Remarks on the Synonymy of Distichocera, a Genus of Australian Longicorn Coleoptera, together with characters of two species supposed to be previously undescribed.' The author, after pointing out the great obligations entomologists are under to the late Mr. Kirby, for his admirable descriptions of exotic Coleoptera, proceeds to recite the characters as given by that lamented naturalist to the genus *Distichocera*, and the species *maculicollis*, and also of those given subsequently by Mr. MacLeay, Boisduval, and himself, to the very different looking insect commonly known as *Distichocera fulvipennis*. He then describes both these insects at great length, and gives his reasons for supposing

them to constitute but a single species, the chief of which are, that both are taken in equal abundance in the same localities and at the same season; that the individuals of *maculicollis* are invariably male, and those of *fulvipennis* invariably female (collectors, moreover, have asserted them to be sexes of one species), and that the structure of the wings and legs is absolutely identical; he considers the extraordinary antennæ of *maculicollis* to be sexual only, since a similar discrepancy exists in other longicorn genera, and also in several other orders of Coleoptera: the discrepancy in colour he considers of little moment, although extremely interesting when carried to such an excess: he proposes to retain the name of *Distichocera maculicollis*, although the genus and species are named from characters possessed by one sex only. The author next proceeds to describe two unique individuals of opposite sexes, which he thus associates under the name of

DISTICHOCERA KIRBYI.

Mas.—Caput nigrum, longitudinalitèr sulcatum; antennæ dimidio corporis longiores, 11-articulatæ, articulis 3—10 biramosis, 11o sesquialtero: prothorax niger, vittis 2 latis fulvis, dorso inæqualis, lateribus medio 1-dentatus: scutellum nigrum: elytra fulva, 5-carinata, apice dehiscentia, singulo truncato, truncatura bisinuata: pedes nigri, metatibiis bicalcaratis. (Corp. long. 1·15 unc. Elytrorum lat. max. ·3 unc.)

Fem.—Caput nigrum longitudinalitèr sulcatum; antennæ dimidio corporis vix longiores, 11-articulatæ articulis 4—8 apice emarginatis: prothorax niger, vittis 2 latis fulvis, lateribus medio 1-dentatus: scutellum nigrum lateribus fulvum: elytra fulva, 5-carinata, apice dehiscentia, singulo truncato, truncatura bisinuata: pedes nigri, metatibiis bicalcaratis. (Corp. long. 1·25 unc. Elytrorum lat. max. ·375 unc.)

Both the specimens are described at greater length in English, and the points in which they agree are pointed out; while the only important discrepancy in structure, that of the antennæ, is regarded, as in the previous species, that of sex only. A third species is founded on a unique and mutilated female specimen, which is referred to the present genus from the general structure, the antennæ being entirely wanting, and the colour much deadened by long immersion in spirits, it is named

DISTICHOCERA MACLEAYI.

Fem.—Caput nigrum, fronte ferrugineâ longitudinalitèr sulcatâ, antennæ desunt: prothorax ferrugineo-lanuginosus, lateribus tuberculatus, haud dentatus: scutellum ferrugineo-lanuginosum, marginibus nigrum, glabrum: elytra ferruginea, 5-carinata, apice vix truncata vix dehiscentia: pedes nigri, metatibiis bicalcaratis. (Corp. long. 1·4 unc. Elytrorum lat. max. ·5 unc.)

The new species are dedicated to Messrs. Kirby and MacLeay, whose talents and researches had supplied us with all our previous knowledge of the genus.

Mr. Adams communicated descriptions of several new species of *Emarginula* from specimens in the collection of Mr. Cuming.—*D. W. M.*

Proceedings of the Entomological Society.

March 3, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors thereof: 'Linnæa Entomologica,' v. Band; 'Entomologische Zeitung,' January and February; by the Entomological Society of Stettin. 'The Zoologist' for March; by the Editor. 'Proceedings of the Berwickshire Naturalists' Club,' vol. iii. No. 1; by the Club. 'Transactions of the Zoological Society,' vol. iv. Part 1; by the Zoological Society. 'Mémoires de l'Académie Royale des Sciences, des Lettres et des Beaux-arts de Belgique,' tomes xxiv. and xxv. 1850; 'Mémoires Couronnées et Mémoires des Savants étrangers,' tome xxiii. 1848—50; 'Bulletin de l'Académie Royale,' tome xvi. 2me partie, 1849, tome xvii. 1re partie, 1850; 'Annuaire de l'Académie Royale,' 1850; 'Catalogue des Livres de la Bibliothèque de l'Académie Royale,' 'Histoire Naturelle des Polypes composés, d'eau douce,' 'Mémoire de Chimie et la Physiologie Végétale,' 1849; 'Exposé Générale de l'Agriculture Luxembourgeoise,' both by Henry le Docte; 'Mémoire sur la Paupérisme dans les Flandres,' par E. Ducpetiaux, 1850; all presented by the Académie Royale de Belgique. Five species of Foreign Coleoptera, found alive in a warehouse in Glasgow; by J. Scott, Esq. Two boxes of insects, collected near Baltimore, United States, by R. H. Spence, Esq., and presented by him. A small hornet's nest, with a queen hornet, and four young ones reared from her eggs; by H. W. Newman, Esq., Stroud.

It was announced that copies of the President's Address at the Anniversary Meeting were on the table for distribution among the members; also that Part 4, vol. i. n.s. of the Society's 'Transactions' was ready.

The President informed the Meeting that larvæ of one of the *Æstridæ* had been found on the rein-deer in the Zoological Society's Garden; probably of *Ædemagena Tarandi*, or *Cephenemyia trompe*; and it was hoped they would be reared.

The following account of a hornet's nest, at New House, Stroud, Glo'stershire, by H. W. Newman, Esq., was read.

"At the end of the month of May, 1850, I placed an empty bee-hive on a board, on a bench in the garden, in expectation of a swarm of bees; the bees did not swarm as expected. On the 3rd of June, I took up the hive to examine it, and found some curious matter adhering to the top, inside, like part of a cork-screw, this I unfortunately (being in a hurry) broke off, and threw down the piece, about an inch long, without examining it. Next day, while I was watching my bees, a large queen hornet came to the empty hive and entered it; at first I thought of killing her, but finding that she remained about ten minutes in the hive, I let her alone; she went out, making her observations all round. I then recollected the piece of curious substance which I had thrown away; searched for it and found it: it was the foundation of three cells, and on examining it, found there was an egg in each of the cells at the bottom; the cells had not any sides at the time, being quite open. The queen hornet* seemed determined still to occupy the hive; she began the same day, and rebuilt all that I had unfortunately thrown down; I watched her day by day, and in about six weeks she had completed nearly twenty cells, and then formed a sort of covering like

* It is rather surprising that she did not forsake the hive when all her eggs were destroyed, for she had to begin *de novo*.

thin brown paper, nearly egg-shaped, about three inches long, open at the bottom. The comb was suspended by the integument on which the thread is tied. In about thirty-five days from the time the second batch of eggs was laid, two young hornets were hatched, and there were then about a dozen grubs of various sizes in the other cells; nearly all the cells had an egg or a grub (two or three remain now in different stages of development): only two or three more young ones were hatched, but the queen mother, at different intervals, carried out at least a dozen live grubs* and dropped them generally near the hive. The weather was showery and variable during the whole summer here, a hill country, and the *esprit de corps* of the queen seemed to be guided by the heat and cold; in a hot sunny day (of which there were but few), she seemed much more alive, and seldom remained absent more than from twenty to twenty-five minutes, working until the clock struck nine at night; there was sometimes just light enough for her to find the hive.† I had not the least fear of her, and used to sit within two yards of the hive she occupied; my wife frequently was with me, and was not the least afraid.

"On some of the stormy days, the hornet frequently remained out for two and three hours, and at one time I fancied she had been destroyed, for I visited the hive two days in July, nearly every hour, and remained waiting for a long time and never saw her, but on one of these evenings she came in at nine o'clock quite exhausted, so much so, that she fell short among some potatoes, and I was obliged to assist her to the hive. The queen worked from the entrance made for the bees; the young hornets worked very little, went out very seldom, and after four were hatched two died. The queen, in the beginning of September, became so weak that she used to fall two or three times when she first went out; so fearing she would be lost, I determined to kill her and the only two young ones left alive; these are the ones sent in the box. I regret that the outer part, or round covering, was broken in endeavouring to cut the nest from the crown of the hive with a pen-knife. The queen has shrunk in size nearly one third, and about half an inch in length since her death; her sting is partly out. Hornets do not act offensively until they become numerous; I frequently turned up the hive when they were all in, and they generally attempted to escape, but never to attack me; plainly verifying the old saying, "certain persons are not so black as they are painted." I assure you that my pet hornets caused a good deal of surprise to some of my neighbours who saw them.

"Hornets appear to be originally natives of a warmer climate than England; in Scotland none were ever seen alive, and I believe in the northern counties none are to be seen; they are not nearly so hardy as the wasps, nor are they of so predatory a disposition. In 1848, when I lived at Thornbury Park, I had a strong hornet's nest in the top of one of my hay-stacks, within seventy-five yards of my bees, the hornets never attacked the bees nor even my wall-fruit, which was plentiful; my cows and sheep used to be within five yards of the nest nearly every day, and they never were stung.

* I can only account for this by supposing that the want of sun prevented the mother-hornet from finding sufficient food for the grubs.

† Several times after nine o'clock she arrived, and it was so dark that I only knew it by hearing her superb "boom" as she flew to the entrance: the hum of the hornet is very magnificent, it is quite peculiar and different from the large *Apis terrestris* (queen), which is next to it in grandeur.

"I found the hornets very fond of an exudation from the bark of a very old, decayed, but growing elm; every day, for a month, they were to be found about six feet from the ground, settling and biting at the moist parts; it may have been the substance from which they made their combs.

"In general hornets build in the hollow parts of old trees; I have seen them in apple-trees, elm-pollards, and now and then in the roofs of old, uninhabited houses and barns, or in a hay-stack."

The President, referring to the observation that hornets did not attack bees, said that he knew a garden at Hammersmith, in which once were two bee-hives, two wasps' nests, and two hornets' nests, and the different inhabitants did not molest each other.

Mr. S. Stevens exhibited a moth, *Orthostixis catenaria*, *Hubn.*, a North American species, and a letter from Mr. Hemming, of Brighton, was read, stating that it came from the collection of Mr. Thornecroft, who believed he took it at Eastbourne.

Mr. Stevens also exhibited two specimens of the New Holland Longicorn beetle, *Phacodes Mossmanni*, *Newman*; and a *Curculio* from Brazil, with some spine-like fungi attached.

The President said that on examining some seed-pods of furze, he found in one, besides specimens of *Oxystoma Ulicis*, a cocoon, in which was a grub belonging he thought to some Hymenopterous parasite upon *Oxystoma*. In a seed-pod of *Lathyrus pratensis* he had lately found a larva and a pupa, which had not yet been perfected, but which he imagined were those of an *Apion*.

Mr. Douglas exhibited a stem of common dock, containing larvæ of a *Pemphredon* or *Cemonus*, placed one above the other at the bottom of a burrow about four inches long, at the top of which was a hole by which they would make their escape when perfect, and which was now closed by whitish papery film.

The President read the following descriptions of two new butterflies, and the characters of the new genus he proposed for *Papilio Telamon*, *Donovan*.

SERICINUS, *Westwood*.

Genus novum e familia Papilionidarum, Teinopalpo et Thaidi affine.

Caput mediocre anticè hirsutum; palpi labiales capite fere duplo longiores subhorizontaliter porrecti; hirti nec setis longis ut in Thaidi instructi; antennæ vix clavatæ, articulis circiter 30 sensim incrassatis, articulis 10 ultimis paullo brevioribus. Alæ anticæ triangulariter ovatæ apice rotundatæ, vena post-costalis 4-ramosa ramis simplicibus, 1mo et 2do ante apicem areæ discoidalis emissis, 3tio ad ejus apicem emissâ, 4to in medio spatio inter apicem areæ discoidalis et apicem alæ; vena disco-cellularis supra brevissima; media multo longiori in medio angulata angulo versus basin alarum spectanti; vena disco-cellularis infra breviori, cum apice venæ medianæ fere continua, et spatio inter hujus ramos 2dum et 3tium longitudine fere equali. Alæ posticæ subovales, margine externo vix repando ramo tertio venæ medianæ in caudam longissimam at valde angustam producto; vena præcostalis apice furcata, venæ costalis basi cum basi venæ post-costalis connexa, cellulam parvam prediscoidealem efficiente. Abdomen feminæ absque lobis membranaceis Doritidum.

Typus *Papilio Telamon*, *Donovan*.

HAB.—Shanghai, China, *D. Fortune*.

In Mus. Britann. et Westw.

THAUMANTIS HOWQUA, *Westwood.*

T. alis supra fulvis omnium serie subapicali lunularum nigrarum valde curvatarum, maculis hastiformis nigris in alis posticis majoribus, anticè adjectis; alis infra luteo fulvis strigis duabus obliquis irregulariter sinuatis 1ma ante et 2da pone medium alarum anticarum, et ante et per medium posticarum, extensis externa e costa fere ad angulum analem ducta ubi recurrat; nubila recta obliqua fusca submedia ad angulum analem extensa, macula grisea terminata; alis anticis ocellis tribus, posticis quinque rufis, pupilla alba iride tenui nigra, strigisque duabus parallelis vix angulatis prope marginem apicalem. Mas.

HAB.—Shanghai, China, *D. Fortune.*

In Mus. Britann.

DRUSILLA MYLÆCHA, *Westwood.*

D. alis niveis, omnium utrinque costa nigricantis posticis subtus ocellis duobus magnis æqualibus nigris pupilla minima alba circulo latiori fulvo, alteroque tenui nigro circumcinctis, capite thoraceque subtus nigris; palpis fulvis; abdomine lutescenti. Mas et fœm.

HAB. in Insulis Louissiadis maris Indici, *D. Mac Gillivray.*

In Mus. Britann.

The President also read 'Descriptions of Three New Genera of Exotic Coleoptera remarkable for possessing an external resemblance to groups to which they do not belong.' The first species, *Paromia Dorcoides*, from Columbia, unique in the cabinet of M. Reich, in Paris, has in fact been mistaken for a small species of *Lucanidæ*, to which family, however, it only bears a relation of analogy, its affinity being to the genus *Ips*. The second species, *Cossyphodes Wollastoni*, of which only a single specimen was found by Mr. Wollaston, under a stone, at Madeira, has a very close *primâ facie* resemblance to the heteromerous genus *Cossyphus*; while it is among the genera originally placed by Latreille among the *Xylophaga*, but separated therefrom by Mac-Leay and introduced among the *Necrophaga*, that we must look for its true relations. The third species, *Euchæta Scaritides*, in his own collection, from New Zealand, remarkable for the long setæ on its sides, appears by its slender filiform antennæ and general form to belong to the *Scaritidæ*; but it is really most nearly related to *Trogosita*.

Mr. Stainton exhibited a species of *Tineidæ*, forming the type of a new genus very near to *Pterolonche* of Zeller; he proposed to call the insect *Limnæcia Phragmitella*. It was captured by Mr. S. Stevens, in the marshes at Hammersmith, and a specimen is in the collection of Mr. Shepherd.

Mr. Stainton exhibited, on the part of Mr. Logan, a drawing of a new species of *Lithocolletis*; and read a description of the insect under the name of *L. nigrescentella*, *Logan.*

M. Stainton also exhibited a new *Tinea*, taken flying in the streets of Liverpool, by Mr. C. S. Gregson. Mr. Stainton proposed for it the name of *pallescentella*.—*J. W. D.*

Proceedings of the Microscopical Society of London.

Anniversary Meeting, February 12, 1851.—DR. ARTHUR FARRE, in the chair.

The Assistant Secretary read the following Report of the Council:—

“According to annual custom, the Council have to make the following Report on the state and progress of the Society during the past year. The number of Members at the last Anniversary was, Ordinary Members, 141; Associates and Honorary, 5; giving a total of 146. Since that time there have been elected 20, making a total of 166. This number must, however, be reduced by 3,—2 deceased and 1 resigned, making a final total of 163; being an increase of 17 upon the number at the last Anniversary. The rooms have been opened on Wednesdays during the session, under the usual regulations. The Cabinet of Objects and the Library have been increased by various donations. There are also in the possession of the Society various Drawings and Diagrams, relating chiefly to papers read at the meetings of the Society; together with copies of the several parts of the ‘Transactions.’ The Council have also to state, that the arrangements made for facilitating the mutual exchange of Objects among the Members, have been found extremely beneficial, not only to those making such exchanges, but also to the Society itself. They have also to express their regret, that the privilege enjoyed by the Members of making use of the Society’s Instruments, &c., on the Wednesday, has not been so fully appreciated by them during the past year as the Council could have desired.”

The Assistant Secretary read the following Report of the Auditors:—

“We have examined the Treasurer’s Account for the past year with the vouchers, and find the balance in hand to be £85 6s. 10d., the whole of which is at the bankers’.”

The President then addressed the meeting, giving a retrospect of the past year, which included those abstracts of papers which have already appeared in the ‘Zoologist,’ and congratulating the Society on its present state and future prospects.

The ballot was then taken for the election of Officers for the ensuing year, when Dr. Arthur Farre was elected President; N. B. Ward, Esq., Treasurer; John Quekett, Esq., Secretary; Mr. John Williams, Assistant Secretary; and Messrs. Gosse, Handford, Lankester and Woodward, new members of Council.

March 19, 1851.—DR. ARTHUR FARRE, President, in the chair.

A paper by George Shadbolt, Esq., entitled ‘Observations upon Oblique Illumination, with a description of the author’s Sphæro-annular Condenser,’ was read.

After some preliminary remarks, Mr. Shadbolt stated that the subject of oblique illumination might be considered as comprehended under two distinct heads, *viz.*, illumination by oblique light on one side only, and illumination by opposing rays, so as to obviate any shadow. The former mode has been long employed by microscopists, but the latter has been suggested and carried out only recently, by Mr. Wenham, in his parabolic condenser. The author considered that by far the most advantageous mode of applying the first of these methods, was by means of the cleverly constructed prism of M. Nachet, the effects of which are far superior to the old method of turning the mirror on one side, and the instrument also possesses some

other obvious advantages. In this method of observing objects the minute ridges are rendered clearly visible by means of their shadows. But in order to view certain objects in the most advantageous manner, it is desirable to get rid of the shadow entirely, and this, as well as a far more brilliant illumination, is effected by the parabolic condenser constructed by Mr. Wenham, which is fully described in a late part of the Society's 'Transactions.' There are, however, certain practical difficulties in constructing a paraboloid correctly, which render it by no means an easy task, and the author was in consequence induced to devise his annular condenser, also described in a recent part of the 'Transactions.' Still, however, the action was not perfectly satisfactory, and Mr. Shadbolt, after many trials, has succeeded in producing an arrangement of spherical curves, one centre only being excentric, which fully answers his expectations and is easy of manufacture, this he names the sphæro-annular condenser. It consists of a portion cut off from a sphere of glass, the lower part being flat and parallel to the object, and the upper surface concave. Its action is as follows:—The light is reflected from the surface of the plane mirror in parallel rays, which falling perpendicularly on the base of the condenser, suffer no refraction, but pass on to the convex surface of the sides, where, as the angle of incidence is in no case less than 45°, they are totally reflected, and thus brought to a focus in the best place for producing this kind of illumination. Diagrams explaining the principles of the construction of this instrument and the mode of its action were also exhibited and described.

A paper by H. Deane, Esq., 'On a New Medium for Mounting Fresh or Moist Animal and Vegetable Structures,' was also read.

After enumerating various disadvantages found in mounting objects, both in the fluids hitherto employed and in Canada balsam, the author went on to describe a substance which, in his opinion, would entirely obviate the greater part, if not the whole of these, and which also appears to possess all the qualities required in a medium for mounting objects in the modes referred to. It is composed of the following ingredients:—Gelatine, 1 oz.; water, 4 oz.; honey, 4 oz.; rectified spirits of wine, $\frac{1}{2}$ oz.; kreosote, 6 drops. The gelatine is to be soaked in water until soft; the honey is to be raised to the boiling heat in another vessel and added to the moist gelatine; the whole is then to be made boiling hot; when it has somewhat cooled, but is still perfectly fluid, the kreosote and spirits of wine, previously mixed together, are to be added; the whole is to be filtered through fine flannel. When cold the composition is in the form of a very stiff jelly, which on being slightly warmed becomes perfectly fluid. He concluded with some practical directions for its use, and also by an enumeration of some of its advantages over former media for mounting objects.—J. W.

Observations on the Generic Names of Lepidoptera adopted in the Museum Catalogue.—Having received numerous letters respecting the discrepancies between the genera in my list of Lepidoptera and those adopted by my friend J. F. Stephens, in his recently published Museum Catalogue, I feel compelled to say a few words on the subject, as the difference principally arises from Mr. Stephens having adopted the names employed by Hübner, in his 'Verzeichniss bekannter Schmetterlinge.' I cannot do better than give an extract from a letter, received about two years since, from my kind and valued friend M. A. Guenée:—"I wish to make a few observations respect-

ing the Verzeichniss of Hübner, a work out of date, and which no other entomologist has mentioned to me hitherto. M. Boisduval and others have done justice to this strange production, where the species most nearly allied are separated by an immense space, and where the most unlike are brought together notwithstanding the immense host of genera which he has created. I may prove this by recalling to your mind that the *Catocalæ nupta*, *sponsa*, *electa*, *convera* and *neonympha*, form, with this author, five different genera; that *Bryophila lupula* and *ravula*, the caterpillars of which scarcely differ from those of *Algæ* and *Glandifera*, are united in the same genus with *Erastria fuscula* and *atrata*, the larvæ of which are almost geometers; and that *Latona* and *fluctuosa* of Cramer, two species as closely allied as *Dictæa* and *Dictæoides*, are each at the end of a different genus, where one is united with *Macrops*, and the other with *Crepuscularis*!—but all this is nothing after the *Diurna* and other families. Still I do not say that this detestable work contains nothing good; but I say that it deserves to be forgotten and remain unnoticed, as it has been till lately, when some attempts have been made to bring it forward. The barbarous names which he has given to his tribes ought not to have any weight; and if I borrow a name from the Verzeichniss it is only to save myself the trouble of creating another, and I do not consider myself at all obliged to keep to the other denominations, which all his compatriot authors have rejected, with just reasons till the present time. I regret to be obliged to extend to Mr. Stephens the critique which I have made on the genera of Hübner; take for example his genus *Margaritia* in the ‘Illustrations,’ in that are huddled together species as different as these, *diversalis*, *cinctalis*, *ferrugalis*, *punctalis* and *prunalis*; while two such closely-allied species as *Nymphæalis* and *Stratiotalis*, form two genera (*Hydrocampa* and *Paraponyx*), separated by a third (*Cataclysta Lemnalis*), which has no more right to form a distinct genus. Why use such barbarous names as *Paracolax*, *Colobochyla*, *Hypsopygia*, *Bomolocha*, &c., when these tribes have already names universally adopted and much more euphonious; and why, if he does use them, does he not adopt the whole of the names in the Verzeichniss? Take care then, my dear friend, how you adopt in your catalogue the names from this work, and be assured that such an adoption will not be approved by your successors in Entomology.” In January last, I sent a copy of Mr. Stephens’ Catalogue to Guenée, and received a letter soon after with the following remarks: “I am much obliged to you for the British Museum Catalogue, it will be useful to me for the English synonyms. You have good reason to disapprove of the deluge of names of genera which the author has extracted from Hübner’s Verzeichniss, a work defunct as soon as it came to light: with such a system we should soon have as many genera as species, or even more; for Hübner sometimes places the male in one genus and the female in another. I cannot understand the love which the English and German entomologists have suddenly taken for this senseless work.” As many readers of the ‘Zoologist’ have probably never seen Hübner’s work, I may just give his divisions of the Lepidoptera:—

ORDO.

PHALANGES.

TRIBUS.

STIRPES.

FAMILIÆ.

COITUS, synonymous with our genera.

GENERA, synonymous with our species.

But the characters of his divisions called "Coitus" are in many instances drawn solely from colour and markings, and consequently species differing entirely in structure are brought together. The characters given of Rhyparia are "*Wings covered with drop-shaped spots*," and Hübner includes in this Coitus, Grossularia and Melanaria only, two species as dissimilar as possible, the former with simple, the latter with strongly pectinated antennæ, in fact a true Fidonia; while Ulmaria is placed in Corrus Calospilos, and Corrus Panthera interposed between. Bombyx Coryli (Linn.) is placed in Coitus Colocasia along with Noctua Scoriacea of Esper, a species closely allied to Viminalis, and the green smooth larva of which resides in curled saw-leave, and this Corrus is interposed between Acronycta, containing one species, Leporina, and Pharetra, containing two species, Auricoma and Menyanthidis. In many cases where Mr. Stephens has adopted Hübner's names for genera, the species included give no idea of the original group. I will confine myself to the Pyrales; take the genus Mesographe, in the Museum Catalogue, it contains but one species, forficalis; but Hübner includes seven species in that Corrus, of which forficalis is the fifth: and why this is picked out to bear the name alone I do not know; it might with as much justice be applied to Asinalis, the last of these seven discordant species. The same remarks apply to Epicorsia and several other genera.—Henry Doubleday; *Epping, March 18, 1851.*

Descriptions of Larvæ of Sphingides, with occasional Notes on some of the rarer European Species.—Having had the opportunity of rearing many of the European Sphingides, and remarking the varieties in the larvæ of some species, I will insert a few lines concerning them in this publication, thinking they may be interesting to some of our entomologists. Dr. Boisduval divides them into six genera, Macroglossa, Pterogon, Deilephila, Sphinx, Acherontia and Smerinthus. The first of these, the genus Macroglossa, contains four species, according to him, the first of which is the M. Fuciformis. The larva of this insect is found during the latter end of June and beginning of July, on honeysuckles, such as Lonicera Caprifolium and L. Periclymenum, &c. I will just here mention, that all the remarks I shall make will hold good for Switzerland, for it is in that country that I reared those I am about to describe. The larva is elongated and covered with small tuberculous spots, which give it a rough or granulated appearance: when full grown, about two inches in length, of a bright green colour, speckled with pale yellow tuberculous spots, getting lighter on the back; a darker green dorsal line, and a pale yellow longitudinal line on either side, which terminates at the horn: horn brownish purple and minutely granulated: head round, green, and minutely speckled with whitish green; mandibles light brown: abdomen chocolate-colour, or brownish purple or violet: stigmata scarlet: thoracic legs pink, tinged with plum-colour; prolegs brownish violet, tipped with grayish fawn-colour. There is a narrow yellow line just behind the head. The edges of the anus are bordered by a yellow line. When the caterpillar is about to undergo its change into the pupa state, it turns to a deep brownish purple colour. The imago flies about during the day. M. stellatarum: the larva of this insect is found in July, on the Galium Mollugo. It is elongated to about two inches. Head round: anal horn straight: ground colour bright green, speckled with small white spots: a straw-coloured lateral line, bordered by dark green: a pale yellowish white longitudinal line, bordered above by darker green on either side of the back, terminating at the base of the horn: a dark green dorsal line, slightly bordered by yellowish green: head green: horn dark purple, tipped with yellow-ochre, and covered with small, black, tubercu-

lous spots: sides of anus bordered by a yellow line: thoracic legs pinkish orange: prolegs green, tipped with pale violet, and a shining patch, half black and half greenish yellow on each: stigmata black: abdomen green, with a dusky ventral line. When young, they are altogether much paler: the pale spots and lines sometimes hardly distinguishable. When about to undergo their transformation into pupæ, they turn to a brownish lilac colour, tinged with green; the dorsal and lateral lines generally disappear, and the longitudinal line, which joins the base of the horn, turns to a bright pink colour: the small spots remain white. Two specimens were brought to me from Mornez (Lausanne), on the 13th of June, 1847, corresponding in every respect to the above description, excepting the stigmata, which were of the same colour as the thoracic legs, and bordered by black. I have always found the larva of this insect on the *Galium Mollugo*, which is found growing on old walls exposed to the sun, and it is against such walls that I have chiefly found the imago flying. Flies by day. These are the only *Macroglossæ* that I have reared from larvæ. The next genus, *Pterogon*, contains two species, one of which I have frequently reared, *viz.*, the *P. Cœnothæra*. The curious larva of this uncommon insect is found during the months of June, July, August and September, on the *Epilobium hirsutum*. The following is the description of it: larva elongated, from two to two and a quarter inches in length: head round: a round, shining spot, or ring, on the penultimate segment, in the place of the horn of other *Sphingides*: very variable in colour. The back is generally thickly spotted with black, or dark gray. The sides have generally a series of oblique, black stripes, partly composed of black spots, one on each segment, and on which the stigmata are placed: stigmata orange-red and bordered by black, partly surrounded above by light blue: the anal spot is of a shining yellow-ochre, bordered by deep brown and with a shining dark brown pupil: the body is transversely wrinkled with dark gray: head olive, gray, or green: escutcheon the same as head: thoracic legs pale grayish white, tipped with brown; prolegs vary according to the colour of the body, but always tipped with brown or with dark gray: abdomen pale, and varying according to the ground colour, and sometimes with a series of dusky spots down the middle: the lower part of sides is generally more or less streaked with brown. When young, they are generally green, covered with minute yellowish spots, with a pale yellowish longitudinal line on either side of back: anal spot green: stigmata small, and light orange: head green: thoracic legs pale yellowish green: prolegs green, tipped with dark brown: abdomen green: the anal circular spot is rather elevated above the surface of the body. This larva is difficult to rear, and appears like a little short serpent. It sometimes eats the flowers of the *Epilobium hirsutum*. I have never found it on any other plant, nor on any other species of *Epilobium* than the *E. hirsutum*. Boisduval enumerates nineteen species as belonging to the genus *Deilephila*, some of which I shall describe in the larva state, beginning with the *D. Elpenor*. The larva of this species is found in July and August, feeding on the *Epilobium hirsutum*; and sometimes on the vine (*Vitis vinifera*). The caterpillar is elongated, and attenuated anteriorly. The three anterior segments are extended or contracted, according as the caterpillar is feeding, walking, or in a state of repose. When contracted they are drawn into the fourth segment. When full grown the larva is about three inches long. The head is small and globular: anal horn small: the ground colour varies from a fine apple-green to dark brown, variously variegated with small dusky lines. The dark individuals have much resemblance to the colour of the Spanish radish. The sides of the fourth and fifth segments are each ornamented with a large eye-like spot of a

shining black colour (ocellus), on the upper half of which is a large reniform spot of a light grayish olive colour, lighter towards the sides. Also two dark oblong patches on either side of the third segment, from which proceed two dusky longitudinal lines towards the head. There are also faint traces of a dusky dorsal line. There is generally an interrupted longitudinal line on either side, in a line with the ocelli. Sometimes there are traces of a dusky interrupted lateral line: and often (especially in the darker individuals) there is a series of pale oblique stripes. In the dark individuals, the anterior segments are of a much lighter colour than the others. Horn dark brown, or black tipped with white, with two short, dark, oblique stripes joining the base of it: head, abdomen and prolegs, varying according to the colour of the body: thoracic legs pale flesh-colour: stigmata brownish yellow, bordered by black, but variable. These larvæ are generally found on the *Epilobium hirsutum*, which grows along the borders of ponds and ditches, rather than on the *Vitis vinifera*, or common vine.—*H. L. de la Chaumette; Church Street, Stoke Newington, March 15, 1851.*

Larva of Pterophorus trigonodactylus.—I observe in the 'Zoologist' (Zool. 3064), Mr. Stainton inquires, do the larvæ of *Pterophorus trigonodactylus* feed on the leaves of *Tussilago Farfara*? Of this I am perfectly satisfied. Some nine or ten years since, then residing on Clapham Common, I had a piece of rather neglected ground which produced a most luxuriant crop of the above plant; amongst the leaves of which I took a number of specimens of *P. trigonodactylus*. Some time afterwards, the larvæ of the moth were in great abundance, feeding on the under side of the leaves. Requiring the ground for a better purpose, I had the *Tussilago* entirely eradicated, subsequent to which I have not seen the insect alive.—*C. Wood; Wandsworth Common, March 17, 1851.*

Capture of a new Curculio.—In the New Forest, near Wallis's enclosure, in the last week in May, 1850, I took a *Curculio*, on the bole of a felled oak, stripped of the bark, which Mr. Walton has been so good as to examine, and pronounces to be *Trachoides hispidus*, a genus placed by Schönherr near *Orchestes*, and quite new to this country. I believe Mr. Walton will describe it.—*J. Walker; Chesterfield, March 14, 1851.*

New Localities for Tetratoma Desmarestii.—February 25th, 1850, I captured under the bark of a decayed arm of an old oak, in Hardwick Park, Derbyshire, one specimen of *Tetratoma Desmarestii*; and September 10th and 30th, obtained one more each day. October 15th, I took another specimen in Chatsworth Park; no doubt it would be found in many situations if well looked for. April 23rd, 1850, bred from bits of oak-bark and wood brought from Hardwick during the spring, a pair of *Hallomenus flexuosus* of Curtis.—*Id.*

Stoat in White Coat.—The stoat (*Mustela erminea*), has been repeatedly seen at Selborne, in its pure winter dress, and in various states intermediate between the summer and winter dress. This, with the exception of Cornwall, as recorded by Mr. Couch, is, I believe, the most southern point at which this change has been observed. *T. Bell; Selborne.*

Notes on Observations in Natural History during a Tour in Norway.

By the REV. ALFRED CHARLES SMITH, M.A.

(Continued from page 3086).

THE Reindeer, (*Cervus Tarandus*). I had started to see the two falls of the Feigum Foss, and had climbed above the lower fall (where the torrent, being a considerable body of water, makes a clear jump over the rock of about 250 feet, and is the most elegant waterfall I have seen), and was proceeding some miles up the mountain, to the upper fall (which, though not nearly so high, is very beautiful), when my companion, a Norwegian officer, learned from the peasant who acted as our guide, that within about twenty miles of us there was a herd of tame reindeer and their masters, a family of Laps or Fins. This being a sight I was particularly anxious to see, and having at that time never seen a reindeer, tame or wild, I made arrangements with my friend the captain to go in search of them. And so, having with a stone beaten a bullet into the form of a pencil, and with that rude implement written to our friends below, to send us up more ammunition and provisions for several days, we sent back our guide, and proceeded to shoot ptarmigan on the fjeld. That night we slept, or rather attempted to sleep, at a mountain log-hut, called "søter," but so abominably filthy was the hut, that tired though we were with a day's mountaineering, we preferred sitting over the fire to lying down. At two o'clock, A. M., our guide returned with the provisions, &c., and as the sun was high in the heavens, we soon started off again. We had not walked many miles before we came upon a small detachment of the herd of reindeer, *viz.*, three fine old bucks, which were browsing on the mountain side. They were tolerably tame, and allowed us to approach within fifty or sixty yards. They were glorious animals, with splendid branching antlers, and had a great air of dignity as well as elegance; they never rested quietly in one spot for a moment, but walked on at a fast pace, and as they went, picked up the scanty moss which seems to be their only food, and which was only to be found in very little pieces, scattered here and there. Truly they must march over a great extent of ground to procure a meal. We were obliged to walk after them as fast as we could, to watch their motions, though they evidently did not quicken their usual pace through any alarm at us. They are very peculiar in appearance: the most striking parts are the nose and feet; the upper lip is enormously thick, and projects beyond

the lower one ; this, at a short distance, makes the face appear very long, and the large round black nose looks like a deformity or an accidental swelling, I can only compare it to a cannon-ball half embedded in the upper lip ; no doubt this projection enables them the more easily to turn up the snow and seize the moss upon which they feed. The feet, being very large and splayed, look strangely disproportionate to the legs, which are elegant ; they much resemble cows' hoofs, and must be admirably adapted for crossing soft snow, the large wide foot presenting a *pièce de résistance*, where the smaller feet of other deer must necessarily sink in : their track across the snow more resembles that of a large ox than of a deer. But though the feet are so formed that they spread out when placed on the snow, and cover a large surface, yet when lifted up again, they contract with a curious crackling noise, and are easily withdrawn from the snow, however deeply they may have sunk in it. When the reindeer is running, this snapping noise, caused by sharply drawing in the hoofs together, is very great. It is with these large scoop-like fore-hoofs that the reindeer dig out the moss, when they have, with most marvellous instinct, discovered it buried deep beneath the snow. The horns are very long and branching, and lie almost parallel with the back : the females, as well as the males, have horns (which I believe is not the case with any other species of deer), but they are smaller and shorter than those of the bucks, and are pure white, like bone, while the horns of the bucks are of a dark brown. The hair or rather fur of the reindeer is by no means the least curious part of these strange animals ; on the body it is dark brown, on the neck and under parts light hair-brown and white, very soft and warm, and reminds one of the fibres of an ostrich feather in appearance, and still more in touch. It is of exceeding closeness, and I should think it quite impervious to wet and cold ; and indeed, as the reindeer cannot exist, even during the summer months, without snow, but constantly lies upon it, and almost always lives upon it, no doubt his coat is suited to resist its effects. The Laps and Norwegians are well aware of this, and in the depth of winter, when they travel so much, and such long distances, in their sledges, with these valuable animals, the universal dress is a cap, a cloak, and an apron of reindeer's skin, armed with which they can defy even Norwegian cold, but without which no one would think of making a journey. These sledging expeditions are reported to be most wild and exciting, even to Norwegians : the whole turn-out is so exceedingly quaint and primitive, and so independent ; the country to be traversed, boundless tracts of untrodden snow ; the harness,

too, by which the reindeer is fastened to the sledge, is very strange ; it consists of a collar and a single trace, which trace is brought under the belly between the legs, and so is fastened to the front of the sledge. The reins are attached to the horns ; and the traveller, well muffled in reindeer-skins, with an apron of wolf or bear-skin, and reclining in his little light sledge, starts at full gallop, cheers on his steed with wild halloos, and performs enormous distances without checking his pace.

The reindeer moss (*Cenomyce rangiferina*), without which these animals cannot thrive, and which seems to form almost their only food, is of a pale greenish yellow, and resembles a dry lichen rather than a moss. At first sight it appears a most miserable, uninviting, and wretched fare ; but on plucking it up, you discover that it is of a succulent spongy nature, and the under part, which is not exposed to the sun and wind, retains a great deal of moisture, and is highly nutritious. I never saw a plant more deceptive. Often and often, when halting for the mid-day meal, or the *siesta*, which my Norwegian companion would never omit, have I been tempted by its dry, soft exterior, to throw myself on a bed of this moss, and as regularly have I arisen from it wet to the skin, as if I had been lying in a marsh : neither did the experience bought by such discomfiture avail to warn me from making the attempt again and again, so inviting does this moss look, and so much does its dry appearance belie the reality of its nature.

I have said that the three deer which we came upon in the morning were fine old bucks ; it was about six o'clock, A. M., when we met with them ; from that time we had walked all day, looking about us in every direction, never being aware of the exact spot, within thirty or forty miles, where the Laps had encamped (as they move their position every week or ten days, according as the locality has an abundant or scanty supply of reindeer moss), and I was beginning to despair of falling in with any more of the deer, when towards evening, as we descended a mountain, the guide called my attention to some black spots in a large patch of snow at about two English miles distance. I could hardly believe him when he told me they were the herd of tame reindeer of which we were in search. We went towards them, and sure enough, as we came nearer, it was clear he was right. It was not the main body, but fifty head of does and calves : they were very much tamer than the bucks we had seen in the morning, and allowed us to come very near them, within three or four yards.

They kept up a continual loud and hoarse bleating, somewhat resembling the noise of sheep. Our guide, who understood them thoroughly, had brought some salt for them; and it was curious to see him advancing towards them in a sidelong manner, with his hand full of salt extended, and chaunting, now in a low, monotonous, plaintive voice, now in a high, excited key, "Sal; sal; sal; salton; salton; salton;" with a peculiar drawling emphasis on the penultimate of the latter words. However, neither his coaxing entreaties, nor his vehement reproaches, seemed of any avail; none of the deer ventured to taste the salt from his hand, though they all greedily devoured it when placed upon the ground. We did not fall in with the rest of the herd or the Laps; they had moved their position since they had last been seen on this fjeld.

It is strange that these reindeer, being necessarily unattended, and wandering so far from their owners as they do, should invariably return; for the small herd of bucks, and the larger one of does, which we saw, must have been at least twenty miles apart.

The does produce very little milk, hardly a pint a-day; and it is astonishing the number of deer requisite to support a family; 200 or 300 head being the usual number. Sometimes 500, or even 1,000 constitute one herd; but then we must remember that this is the sole wealth and the only means of subsistence of these primitive and contented people. The skins and sinews and horns of the deer constitute their clothing, their camp-furniture, and domestic utensils; while the flesh and milk supply the Laps with food. The meat of the reindeer is coarse and hard, very dark-coloured and very tough. This may partly be owing to the infamous mode of cooking adopted in Norway, and partly to the want of change of diet; for as we had reindeer venison day after day, for breakfast and dinner, and seldom anything like bread or potatoes, or other vegetable, to vary it, I may say we ate it *usque ad nauseam*, although at first we considered it a great treat, and were charmed with such good fare.

ALFRED CHARLES SMITH.

Old Park, Devizes,
April 14, 1851.

(To be continued).

Occurrence of the Northern Rorqual (Balæna Boops) near King's Lynn.—A whale answering to Mr. Bell's description of the supposed young of this species, was found to have stranded itself near Lynn Regis, on Sunday, February 2nd. Notwithstanding its small size, it was killed with difficulty; but the want of any weapon of a more formidable character than a common poker heated red hot, was doubtless in a great measure the reason. Having been made an exhibition of at Lynn, it was carried to Ely, and thence was brought here, where it continued to be shown for about ten days, no putrefaction having begun to take place, and no method of preservation being adopted until within the last few days, when it was disembowelled and filled with salt. In every respect, so far as I could ascertain, it corresponded accurately with the second figure in Bell's account of this species (Brit. Quad. 521), which is a copy of a drawing by Dr. Hunter of one caught on the Dogger Bank, but which that celebrated anatomist makes a distinct species of, and calls *B. rostrata* (Phil. Trans. 1787, p. 373, pl. 20). The way in which these two examples principally differ from the unquestionable *B. Boops*, as figured by Mr. Bell, appears to be in the white band across the pectoral fins (which in the Lynn specimen was of a fine ivory colour, with marbled edges, contrasting strongly with the India-rubber look of the rest of the upper surface), and in the lips, which are almost straight; but from the position in which the *B. Boops* is lying in Bell's figure, it is difficult to perceive whether the waved line of the under lip may not be only a consequence of the drawing's being in perspective, and the subject of it lying partly on its side. In the doubtful state of our knowledge respecting these creatures, it is to be regretted that some naturalist did not see and minutely examine this specimen; his account would have been good, and perhaps convincing evidence, either for or against the distinctiveness of the "piked whale" and the "fin fish." This animal was a female, and measured twenty-two feet in length; its weight was computed to be about forty tons; the baleen was about four inches long at the muzzle, and a foot at the gape. It left this place for Huntingdon, *en route* for Birmingham, where perhaps some of your correspondents may have had the good luck to see it dissected. — *Alfred Newton; Magdalene College, Cambridge, March 1, 1851.*

Description of the Orpheus Warbler, (Sylvia Orphea).

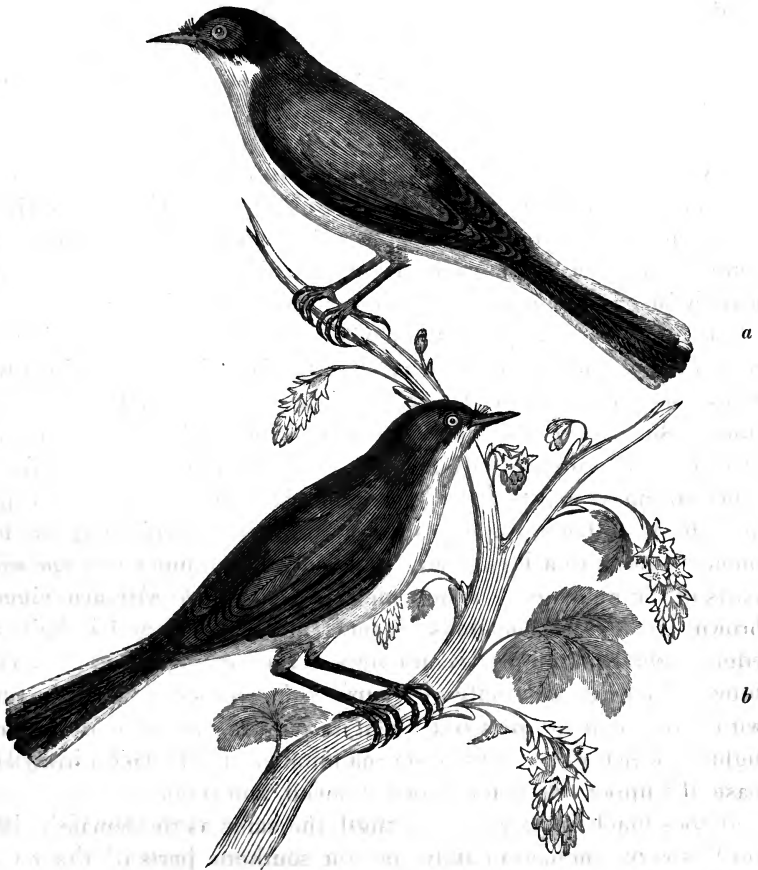
By EDWARD NEWMAN.

I AM indebted to my esteemed correspondent, Mr. Milner, for the means of presenting to the readers of the 'Zoologist' faithful representations of both sexes of this very rare bird. The female is drawn from Mr. Milner's specimen, the only one ever killed in this country, and now unique in that gentleman's almost unrivalled collection of British birds. In both figures the backs of the birds are inclined towards the reader, in order to exhibit more clearly the white feathers of their tails. The first notice of the occurrence of this bird in Britain, appeared on the wrapper of the 'Zoologist' for September, 1851; and a full and explicit account, which I have taken the liberty to

transcribe below, was kindly furnished by Mr. Milner to the October number of this periodical.

“My bird is evidently a female, and was observed in company with its mate for a considerable time before it was shot. The other bird had a black head, and the description I received, left no doubt on my mind that it was a male bird of *Sylvia Orphea*. The bird, of which I send you a description, was shot in a small plantation near the town of Wetherby, on the 6th of July, 1848, and was, unfortunately, very ill set up by the man who obtained it: it had the appearance of having been engaged in incubation, from the state of its plumage. Mr. Graham, my bird-stuffer, at York, hearing that a very uncommon bird had been shot, went over to Wetherby, and, fortunately, obtained the specimen for my collection. It has the beak black and very strong, eight lines in length, the upper mandible very much grooved. The whole upper part of the plumage dark ash-coloured brown. The outer feather of the tail white; the second on each side edged with dirty white, the rest of a brownish black. Chin dirty white; throat and belly brownish white; under surface of the wings and vent light brown. Legs very strong; toes and claws black. Total length, 6 inches 3 lines. Since procuring this specimen, I have received a male bird from France, with four eggs, and send you a description, in case any other specimen may fall into the hands of your readers. The head and cheeks to behind the eyes black, on the top of the head the black blends itself into ash-coloured gray, and so continues over the upper parts of the plumage. Wings almost black, edged with ash-coloured brown; the external feathers on each side of the tail white, the inside edges light brown; the second tipped with white, the rest blackish brown. Throat and belly of a pure white; breast and flanks white, with a very delicate rose tint; vent and under coverts of the tail of a light brownish red. The lower mandible of a yellowish brown at its base, the upper one black, much grooved, and thick. The legs, claws and toes black and strong. Length the same as the female. This bird is very common in Italy and the southern parts of France and Piedmont, and is sometimes found in Switzerland. It builds its nest sometimes in low bushes, and not uncommonly in holes of rocks and walls, also on the roofs of deserted houses, and lays four to five eggs, white, irregularly marked with yellowish brown spots, chiefly at the larger end, about the size of the garden warbler, but more pointed at the small end. This description, which agrees most accurately with my birds and eggs, I have taken from the ‘*Manuel d’Ornithologie*’ of M. Temminck, tome i. p. 200.”—Zool. vii. 2588.

It seems not a little extraordinary, and is one of those facts in nature which we can only record without attempting to reason on it, that a bird, confined on the continent to Italy, the south of France, and to a small portion of Switzerland, should, after passing over Germany, central and northern France, and the South of Britain, reappear



Orpheus Warbler.

a. Male.

b. Female.

in Yorkshire. Anomalies of this kind do, however, frequently turn up, as though to puzzle us. Such was the occurrence of the hawk owl, recorded in a recent number, on the most unquestionable authority ; and such have been dozens of records which would never have been

preserved, had not the 'Zoologist' offered for them so appropriate a depository.

This bird is admirably figured and briefly described in Gould's inimitable 'Birds of Europe.' And although *this* adds little to its history, I will quote it entire, even at the expense of some little repetition, in order to render my account of the species as complete as possible.

ORPHEAN WARBLER.

Curruca Orphea. *Bec-jin Orphée.*

"Although the present species differs in a trifling degree from the more typical examples of the genus *Curruca*, especially in having a stouter form of beak, which is more deep than wide, we do not feel ourselves at liberty to separate it on such slender grounds, as its general habits and form overbalance the minutiae alluded to.

"The Orpheus warbler is an inhabitant of the southern provinces of Europe, and we have more than once received it in collections from India. According to M. Temminck, it is very abundant in Italy, particularly in Piedmont and Lombardy, and the southern departments of France. It is accidentally met with in Switzerland and the adjacent districts, but never occurs in more northern latitudes. On referring to the valuable little work of Professor Savi, on the Ornithology of Tuscany, we learn that it is there a migratory bird, and much resembles in habits and manners the common whitethroat (*Curruca cinerea*, *Bechst.*). Its food consists of insects and berries, and it builds in bushes, often in company with others of the same species. M. Temminck states that in addition to bushes, it also selects holes in ruins, old walls, or under the eaves of isolated buildings, as a site for incubation. The eggs are four or five in number, nearly white, irregularly marked with yellowish blotches and small brown dots.

"The male has the top of the head and ear-coverts brownish black; the whole of the upper surface is of a cinereous brown, with a tinge of olive, the quills and tail being rather darker; the outer feathers on each side of the latter are white, tinged with reddish brown, which prevails more decidedly on the flanks and under tail-coverts.

"The female resembles the male, except that the head is of the same colour as the rest of the plumage."

I should add, that Mr. G. R. Gray, in his 'Synonymic List of British Birds,' published by the Trustees of the British Museum, expresses a doubt as to this species; but whether as to its occurrence

in Britain, or as to its identity with M. Temminck's bird, I am unable to say. The following is the passage to which I refer.

"6. ? SYLVIA ORPHEA.

"*Sylvia orphea*, Temm. *Man. d'Orn.* i. p. 198? Milner, *Zoologist*, 1849, p. 2588.

"? *Sylvia grisea*. Vieill.

Pl. enl. 579, f. 1?"

This paper, brief and imperfect though it be, will, I trust, induce ornithologists to make diligent search for other examples of the species; the female is particularly liable to escape a cursory observer.

EDWARD NEWMAN.

Note on the Songs of some of the British Birds, as remarked in the year 1850.—

	Song Opens.	Song Ends.	Song Resumed.
Common wren (<i>Troglodytes vulgaris</i>),	Jan. 25	July 24	—
Robin (<i>Erythaca rubecula</i>),	" 25	" 1	Sept. 28
Song Thrush (<i>Turdus musicus</i>),	" 28	" 20	Oct. 10
Skylark (<i>Alauda arvensis</i>),	" 30	" 14	Sept. 20
Missel Thrush (<i>Turdus viscivorus</i>),	Feb. 1	May 20	Oct. 10
Hedge Accentor (<i>Accentor modularis</i>),	" 15	" 28	" 6
Chaffinch (<i>Fringilla cœlebs</i>),	" 17	June 27	Sept. 8
Blackbird (<i>Turdus merula</i>),	" 19	July 20	Oct. 6
Wryneck (<i>Yunx torquilla</i>),	April 10	June 4	
Willow-wren (<i>Sylvia trochilus</i>),	" 12	Aug. 15	
Chiff-chaff (<i>Sylvia hippolais</i>),	" 13	" 8	
Nightingale (<i>Philomela lusciniæ</i>),	" 13	June 25	
Black-cap (<i>Curruca atricapilla</i>),	" 13	July 15	
Cuckoo (<i>Cuculus canorus</i>),	" 23	June 20	
Tree Pipit (<i>Anthus arboreus</i>),	" 23	July 15	
Garden Warbler (<i>Curruca hortensis</i>),	May 2	" 10	

—F. A. Chennel; Esher, Surrey, March 21, 1851.

Note on a singular assemblage of Birds.—There is something very extraordinary in the way in which animals find out those places where the greatest amount of food is to be obtained, and in the manner in which occasionally they congregate together in search of it. The summer of 1850, was remarkably dry, so much so, indeed, that most of our wells were exhausted, and I have no doubt the feathered tribes were much pinched for food. About the 20th of November, however, and several following days, rain came and saturated our meadows, causing the slugs and earth-worms to come out. I was down by the Trent about this period, and witnessed a curious spectacle. I heard above my head a tremendous cawing. I looked up. An immense flock of rooks, crows, jackdaws, starlings and lapwings was coming towards me. On they came, flock after flock, in continuous succession. It seemed as if a hundred

rookeries had sent forth their inmates; and a hundred parks had poured out their jackdaws and starlings. And such a row did they make!—the jackdaws chiding; the rooks cawing; and the lapwings wailing; that I can only compare it to the noise emanating from innumerable sea-fowl, which has been so charmingly described in the ‘Letters of Rusticus.’ When the whole multitude had noised as long as they thought proper, and wheeled about for a considerable time, they descended in the meadows to feed, and scarcely a note was heard. Such a numerous, quaint, sable-coated throng I never saw assembled together. I could not estimate them at less than 30,000.—*J. J. Briggs; Melbourn, March, 1851.*

Occurrence of Peregrine Falcons near Oxford.—Two male specimens of the peregrine falcon (*Falco peregrinus*) were shot in this neighbourhood, and brought to Mr. Osman, the bird-preserver, on Saturday, the 8th of this month. They were killed on the same day, but not in company.—*G. J. Webb; Brasenose College, Oxford, April, 1851.*

Food of the Kestrel, (Falco tinnunculus).—On the 1st of this month, whilst Mr. Gornal of this town was skinning a kestrel, he accidentally cut into the stomach of the bird, and was so much surprised at its contents, that he brought me the bird. In the stomach I found no less than seventy-nine caterpillars, all (except two) of one kind, about a quarter of an inch in length; the species I could not determine. There were also twenty-four beetles, a full-grown field mouse, and a leech, two and a half inches long. Now we would fain hope, if the beauty of the bird, its graceful flight, and the interest its presence gives to a rural scene, be insufficient to protect it from the too-often thoughtless keeper’s and the ruthless watcher’s gun, that such facts as the above ought to save it; for it is self-evident, that every kestrel destroyed is a public loss, and every one who employs a keeper or watcher ought to give strict orders for their preservation, as much as, and perhaps more so than, any species of game on their estate. We also learn from the above, although its powers of flight are great, and much of its life is spent in the air, that the kestrel is a ground feeder. We think it not very improbable that in the latter part of February (the bird having been shot a few days), the caterpillars would be taken in a state of hybernation: the larvæ were those of moths.—*Joseph Duff; Bishop Auckland, March 14, 1851.*

[See a paper by Rusticus, intituled “The Feathered Mousers,” which appeared in a late number of Chambers’ admirable ‘Edinburgh Journal,’—*E. N.*]

Occurrence of the Hen Harrier (Circus cyaneus) at Alciston, Sussex.—An adult female specimen of the hen harrier was captured alive on the downs near Alciston in a singular manner, in the last month, and is now in my possession. A boy was walking over the downs, when a terrier he had with him saw the bird at a distance and ran after it. After running in circles round the bird, the latter fell to the ground upon its back, and was immediately seized by the boy.—*J. B. Ellman; Lewes, Feb. 26, 1851.*

Occurrence of the Marsh Harrier (Circus æruginosus) at Haughton, Sussex.—An immature specimen of the marsh harrier was shot at the above place last month, and is now in my possession.—*Id.*

Occurrence of the Black Redstart (Phœnicura titrys) at Lewes. On the 20th ult. I obtained a specimen of the black redstart near this town. This is the fourth specimen shot near the town within twelve months.—*Id.; April 4, 1851.*

Occurrence of the Black Redstart (Phœnicura titrys) near Teignmouth.—In the winter of 1844, which was one of unusual mildness, two specimens of the black redstart were shot at the Parson and Clerk rocks, near Teignmouth, by my brother and

myself. The almost total absence of anything which could be called winter, during the present season, induced us again to search for these birds in their old haunts, and we were not disappointed, as my brother killed a fine male on the 30th of January, and a female bird on the 21st of February. We have some reason to believe that these birds are regular winter visitants with us, as one of the excavators at work upon the South Devon railroad, who appeared to be well acquainted with them, said that he had seen them in the locality for two or three winters. He could scarcely be mistaken in this, as he was evidently an observant and intelligent man, and told us it was an unusual thing for redstarts to remain with us during the winter months.—*Robt. C. R. Jordan ; Teignmouth, Devon, April 2, 1851.*

Note on the Habits of the Dartford Warbler (Sylvia undata) on the Downs in the neighbourhood of Lewes.—On the 12th of October last, I shot a female Dartford warbler, and on the 7th of November a male, in the same place, as already recorded in the 'Zoologist,' (Zool. 2953). I have in consequence ever since paid particular attention to this bird; but until the 12th instant I had not seen another specimen. On that day, Mr. Swaysland, of Brighton, shot a female while rabbit-shooting. On the 15th instant,—a beautiful day,—I saw a pair, male and female, among some furzes on the downs, and after ineffectually endeavouring for some time to get a shot at them, they separated, and the male flew into a solitary furze-bush, about six feet long and ten broad. I sent my dog into the bush and stationed myself at one end, while my man beat the other, but no bird appeared. Here was a mystery! We certainly saw the bird enter, and had a clear view all round the bush, so that it could not have escaped without our seeing it. So we stood still for a few minutes, and the dog came out of the furze: when all was quiet, the little bird darted out close to me, and flew into an adjoining furze-bush, where we again repeated the same process, but in vain. At last, he darted out as before, and we lost him in some thick furzes. On the 21st instant,—a beautiful day,—I again went to the same place, beat the bushes, and sent in my dog, but no bird appeared; so I altered my tactics and sat down on the ground. I had not waited long before I heard the call of the male, and by creeping quietly among the bushes, and keeping out of sight, I soon got a shot at him, and shortly afterwards at his mate. I had an opportunity of seeing the male dance in the air, and his position at that time was so ridiculous, that I must describe it. Head and neck turned alternately to the right and left: legs hanging down as if broken: tail jerked about in all directions, and the bird *angrily complaining* all the time. From this account it will be seen that, as far as my experience goes, the habits of this bird differ in one very material particular from those mentioned by Rusticus, namely,—“It is not active and noisy when disturbed by dogs.” The bird also appears to me to confine itself to particular spots, and to associate in pairs. A. E. Knox, Esq., only records two instances of its occurrence in Sussex. All my four specimens were shot in whitethorns, and it appears to be more partial to them than to furze. If any of your correspondents can reconcile the apparent differences in habit between the birds in this neighbourhood and those of Godalming, or give any further information respecting such a local bird, I doubt not that it will greatly oblige many of your readers.—*J. B. Ellman ; Lewes, Feb. 27, 1851.*

Song of the Chaffinch.—The song of the chaffinch, if not in itself melodious, is nevertheless hailed with welcome, as the sure harbinger of approaching spring, when first we hear it on a fine morning in February, or it may be in January. At the commencement of the season, the notes are but very indistinctly muttered in a low under-

tone, the song being abruptly ended and left incomplete, as if the musician were out of practice (as in truth he is), or were but tuning his instrument. At a later period of the season, however, when in full voice, the chaffinch adds a very pleasing and joyous chorus to the general orchestra of the grove; invariably ending his somewhat brief performance (unless accidentally interrupted) with notes which, "as the fool thinketh," seem to express the words "Jemmy Twitcher." And hence in our family circle here, the bird passes familiarly among us under that distinctive appellation. But I am falling into a gossiping digression, whereas my object is merely to record a simple fact. Although my ears were kept open for the sound, and on the alert, I did not hear the chaffinch attempt to sing this season till the 15th of February. I have sometimes heard the song at the latter end of January; once so early as the 12th of that month (in 1845); and once on the 31st of December (in 1817); but this last instance occurred under the influence of the mild and genial climate of Cornwall. The early part of February may be regarded, in a general way, as the usual time for the commencement of the song. The 15th, therefore, is later than we might have expected, considering the mildness of the winter, and the unusual openness of the weather during the months of January and February of the present year. It should almost seem that these little feathered songsters have an almanac of their own, by which to regulate their sayings and doings, and of which we rational bipeds know little or nothing.—*W. T. Bree; Allesley Rectory, March 24, 1851.*

Instinct and Sagacity of Rooks and other Birds.—In White's 'Natural History of Selborne' are some curious anecdotes of rooks, which are very interesting to the ornithologist: the following circumstance happened near my own house. A small party of rooks took possession of some trees about twenty years ago, and have continued ever since to build there annually. But in 1840, a pair of rooks built a nest about a hundred yards from the main body. Early in the month of April, I ordered some short pollard elm trees to be cut down near this single nest; the next morning, the men came within a few yards of the tree in which this nest was built, and I was watching their operations, when I observed that half the nest in the tall tree near had disappeared. Soon afterwards two rooks came to the place, and each carried off a mouthful of sticks, and so they continued to do every two or three minutes, until the whole nest was carried away. The rooks built a fresh nest near the main body; and I am thoroughly convinced that they were in expectation of my being about to have their tree felled! The rooks know a gun very well; but such is their discrimination, that when I used to walk under the trees with my gun two or three times a week during the hatching-season, they became so used to me, that they would scarcely ever get off their nests, having learned that I never shot at them during that period. It is quite proverbial how magpies and jays know Sunday from a week-day. They will let any one approach much nearer to them on a Sunday than on any other day. Where I reside, the jays visit my shrubberies; and when I go out there on a week-day, they immediately give out their note of alarm—"Skay!" "Skay!" But strange to say, on several Sundays I have approached them within a quarter of the distance, and they would fly out without uttering their usual note of alarm. Jays are mischievous birds. I preserved game for many years, and have known them destroy a nest of pheasant's eggs in a few minutes. I had a large stock of wood-pigeons in my woods where the jays could not be destroyed, and they invariably attacked the wood-pigeons' nests, breaking their eggs wherever they found them. I have frequently caught them at the nests of the thrushes and blackbirds as well. The magpie is a great enemy to young black-

birds: it also destroys eggs of all sorts, and is one of the greatest enemies the farmer has to contend with. The common crow is equally destructive.—*Henry W. Newman; New House, Stroud, April 14, 1851.*

Note on the Greater Spotted Woodpecker.—This bird appears to me to evince a decided partiality to frequenting *fallen* timber. In 1849, a considerable number of trees were cut down here in an open part of the neighbourhood, which were eventually drawn together, and piled into lots. These lay for some time, and were visited almost daily by individuals of the greater spotted woodpecker, a bird extremely rare in exposed situations. Five specimens were soon killed, but many escaped. Their habits and manners were very amusing, especially whilst searching for food. They alighted on the timber, placed the body in a particular position (generally with the head downwards and tail upwards), and commenced pecking away at the bark. Piece by piece it fell under their bill, as chips from the axe of a woodman. Upon examining the bark, I found that the pieces were chipped away in order that the bird might arrive at a small white grub which lay snugly embedded in the bark; and the adroitness of the bird in finding out those portions of it which contained the greatest number of grubs, was certainly very extraordinary. Where the birds were most at work, on a particular tree, I shelled off the bark, and found nearly thirty grubs in nine square inches; but on shelling off another portion from the same tree, which remained untouched, no grub was visible. Yet how the bird could ascertain precisely where his food lay was singular, as in both cases the surface of the bark appeared the same, and bore no traces of having been perforated by insects. During the day, one bird chipped off a piece thirty inches long and twenty wide,—a considerable day's work for so small a workman!—*J. J. Briggs; Melbourne, March, 1851.*

Late Sojourn of Swifts in 1850.—I have hitherto omitted to record what may not, perhaps, be unworthy of notice in the 'Zoologist,' the late sojourn of the swifts with us last summer, (1850). I speak, however, only of what I had the opportunity of observing at this place, without knowing whether the same may have been the case elsewhere. We had swifts here about the village on the 15th of August; four or five on the 16th and 17th; again a pair, if not more, were seen on the 26th; three on the 30th, which were heard to squeal; and on the 1st of September, two pair were sporting and squealing about the village, as if it had been the month of June. Indeed, it was their joyous note that first attracted my attention to them on that day. Has a similar unusually late sojourn of these birds been remarked last year by others in different parts of the country? I have occasionally seen a stray swift or two as late or later than September 1st, (once a pair on the 10th of September at Dover); but I never saw so many as four, or heard them squeal, at that late period. — *W. T. Bree; Allesley Rectory, February 21, 1851.*

Cuckoo's Egg on the 5th of April.—A lad living in the hamlet of Lakenham, obtained from the nest of a hedge accentor the egg of a cuckoo, on Saturday, April 5th, 1851.—*J. O. Harper; Norwich, April 12, 1851.*

Landrail in February.—On the 18th of February, some boys with a dog caught a fine landrail (*Crex pratensis*). It was alive when brought to me, and appeared in good plumage and excellent condition. As I believe it is an unusual occurrence at that time of the year, you may perhaps consider it worthy of record in the 'Zoologist.'—*Warner Varnham; Bembridge, Isle of Wight, March 10, 1851.*

Woodcocks breeding in Sussex.—In the January number (Zool. 2990), Mr. Hussey says he has received authentic intelligence, that during the summer of 1850, a

brood of young woodcocks was seen at Brede, in East Sussex. I have known the woodcock to breed in that neighbourhood for some years, and believe that great numbers do so all through this part of Sussex. A fortnight ago I saw three eggs, and in 1849 eight others, which had also been taken near here; and I know the bridge-keepers find four or five nests every year. I will conclude by stating that there are at this moment fourteen woodcocks hanging up in our market, all from this neighbourhood. — *Walter W. Reeves; Parade, Tonbridge Wells, April 8, 1851.*

White Specimen of the Knot.—A specimen of this bird, quite white, was shot near Maldon, in Essex, on the 13th of February, and is now in the possession of Mr. J. Green, Naturalist, No. 1, East-road, City-road.—*Edward Newman.*

Occurrence of the Little White Heron (Ardea russata) in South Devon.—I have obtained a very fine specimen of the little white heron (*Ardea russata*), which was shot in the south of Devon last April.—*A. Cleveland: Tapley Park, Barnstaple, Devon.*

Note on the Changes of Plumage which occur periodically in the Male Birds of several different Species of Ducks.—Amongst the many interesting periodical changes of plumage among birds, there are probably few more curious than that by which the male birds of many species of ducks almost entirely lose their distinctive dress during a shorter or longer interval (in different species) between the finishing of one breeding season and the commencement of the following. The periods at which these changes take place are, of course, best observed (where possible) in birds in a wild state; but as the migratory habits of the tribe render such observations difficult, it would probably assist our knowledge of the subject, if those who have the opportunity of observing the changes of plumage which occur in ducks that are kept in captivity, would record the results which may come under their notice in this particular. With the view of contributing my quota to such researches, I beg to forward a list of observations which have been made by my gardener during the past twelve months, on nine different species which I keep pinioned on a suitable piece of water, where they appear to be preserved in good general health. The list has been drawn up with the view of showing the date of the commencement and completion of each moult in each species; the species being arranged in the order of the commencement of the first change.

	Time of beginning to lose the full male plumage.	Time of having completed the process of losing full male plumage.	Time of beginning to reassume the full male plu- mage.	Time of having completed the reassumption of full male plumage				
Hybrid between a Mallard } and Pintail }	May	16	July	2	August	8	October	22
Gadwall	June	2	„	7	„	4	„	5
Mallard	„	6	August	4	Not observed		„	5
Garganey	„	16	„	4	Decemb. 28		February	18
Widgeon	„	17	„	20	Septemb. 19		Novemb.	10
Carolina Wood Duck	„	17	July	23	August	8	October	1
Pintail.....	„	20	„	18	Novemb.	8	January	9
Shoveller.....	„	30	August	10	„	10	February	18
Teal.....	July	2	July	27	October	1	Novemb.	3

—*J. H. Gurney; Easton, February 25, 1851.*

Longevity of the Nyroca Duck.—A specimen of the Nyroca duck, which was taken in a decoy at Hempstead, in this county, has lately died, having lived in captivity just fifteen years. It was a male bird, and always appeared to be in good health during the above period. As it is only by the collection of facts that light can be thrown on

the obscure subject of the age to which birds arrive, I have thought that this circumstance was worth recording.—*Id.*

Description of a Guillemot shot on the Coast of Sligo, Ireland.—I send a description of a bird that was shot on the 20th of July, 1850, by my friend Mr. R. Irwin, and which I should have considered to be the female of the black guillemot (*Uria Grylle*), were it not for the peculiar colour of the legs, and that of the interior of the mouth. I am not aware that in this respect the female differs from the male. Beak black; inside of mouth *yellow*: top of head, back and tail dusky black; nape of neck dusky black spotted with white; cheeks and under side of neck dirty white, the feathers edged with black, which on the lower part of the neck forms conspicuous rings; throat, breast and belly white, feathers edged with dingy black; sides irregularly barred with black and white, with a spot of pure white immediately under the shoulder-joint; primaries, secondaries, tertiaries and larger wing-coverts black; smaller wing-coverts pure white, broadly edged with black; under coverts of wings and tail white, with few black spots; legs when shot, *dark greenish black*. Dimensions:—length from carpal joint to tip of wing, $6\frac{1}{2}$ inches; whole length of bird, 14 inches. The beak is finer and smaller than that of the male black guillemot. The bird was alone when shot, and weighed considerably less than a male black guillemot killed on the same day. I send you this communication in order to obtain some correct information as to the species: the characteristics are nearly those of the young birds, and the winter plumage of both young and old; but this is an old specimen, and was shot in the middle of summer.—*Francis K. Amherst; Oscott, Birmingham, April, 1851.*

Occurrence of the Eared Grebe (Podiceps auritus) at Yarmouth.—I have a fine specimen of the eared grebe, in full plumage. It came to Leadenhall market in the same basket with four specimens of the great crested grebe. They were all shot near Yarmouth on the 14th. The eyes are not red, as generally described, but, unlike those of the rest of the grebe tribe, they are of a rich deep orange, the eyelids edged with the same colour. The bird came into my possession the day after it was shot.—*Richard Strangways.*

Occurrence of the Kittiwake Gull (Larus tridactylus) on Wandsworth Common.—About five weeks since, my son informed me that a strange bird had settled on the pond among ducks, I procured my gun and was fortunate enough to shoot it, when it proved to be a fine male specimen of the kittiwake gull (*Larus tridactylus*), which I preserved, and it is now in my collection. Surely this must have been an escape from some collection in the neighbourhood of London.—*C. Wood; Wandsworth Common, March 17, 1851.*

Occurrence of Bonaparte's Gull (Larus Bonaparti) in Scotland.—I take the liberty of sending the portrait of a gull, to ask if you can determine the species. The picture is too large, in breadth especially, giving the idea of a much larger bird; but as far as the colouring is concerned, it is correct. The principal points in which it differs from the common black-headed gull (*Larus ridibundus*) are these:—the head in the former is a slaty black, in the common bird brown; the bill is black, instead of reddish brown; the legs are a bright red, like a tern's, in the common bird they are the same as the bill; and the ends of the quills are marked in quite a different way: the whole bird is smaller, and the legs shorter. I shot it about the end of April, 1850, on the shore of Lochlomond, in Dumbartonshire. The common black-headed gull is a familiar bird, and this one strikes me as quite different.—*George H. Leith; 2, The Mall, Clifton, March 18, 1851.*

[The drawing represents Bonaparte's gull (*Larus Bonaparti*), described in Richardson and Swainson's 'Fauna Boreali-Americana,' part 'Birds,' p. 425. A notice of its occurrence at Belfast, together with a minute description, will be found in an early number of the 'Zoologist,' (Zool. 2069). Mr. Yarrell, who has seen the drawing sent by Sir G. Leith, and has kindly investigated the matter, pronounces it to be *L. Bonaparti*. I have seen a third British example, and have introduced this species without a doubt into the last edition of the 'Zoologist List of British Birds.'—*E. N.*]

The Little Gull (*Larus minutus*) in *Derbyshire*.—A most beautiful specimen of this pretty little gull was killed in this parish on the 22nd of January, 1851, by my neighbour, H. Orton, Esq. Having examined it by Mr. Yarrell's descriptions of the British gulls, I found it was a young bird of the year. When first seen, it was swimming leisurely on the Trent, nearly opposite to Weston Cliff, but on being disturbed it rose from the river; soon, however, it settled down again on the water, and was so tame that it allowed a person to approach within thirty yards without betraying the least fear. Indeed, when my friend got up to it with his gun, he was so close that he dared not fire, lest the bird should be shattered to pieces, and he was obliged to make it take wing, and then shot.—*J. J. Briggs ; King's Newton, Melbourne, Derbyshire.*

Occurrence of the Shag or Green Cormorant (*Phalacrocorax graculus*) at *Oxford*.—A fine specimen of this bird was shot lately in the immediate neighbourhood of Oxford by a poor man, from whom it was purchased by Charles Coar, Esq., and presented by him to the Ashmolean Museum. As I see by Yarrell that this bird, "it is said, never quits the salt water to follow the course of a river," perhaps a notice of its occurrence at some sixty miles from the sea, may not be uninteresting to your ornithological readers.—*A. W. Norman ; Christ Church, Oxford.*

Occurrence of the Fork-tailed Petrel (*Thalassidroma Leachii*) at *Blenheim Park, Oxfordshire*.—A specimen of the fork-tailed petrel, an occasional though unwilling visitant, was found dead this last winter in Blenheim Park, and is now in the Ashmolean Museum.—*Id.*

Occurrence of the Gemmeous Dragonet near Gamrie.—"The gemmeous dragonet (*Callionymus lyra*, Linn.)," says Mr. Yarrell, "is not a common fish on our coasts; and according to my own observation is much more rare than the sordid dragonet." Within the last fifteen months not fewer than eight specimens of the former, called here the bridegroom, have been caught off the fishing stations in this parish; and during double that space of time I have been able to ascertain the capture of only two examples of the latter. With one exception, a sordid dragonet, they were all taken with lines. As bearing on a question of species, I may add, that a gemmeous dragonet in my possession contains a roe, which remains *in situ* in the specimen. "The Prince of Musignano, in his 'Fauna Italica,' has figured the female of the same colour as the male, but without the elongation of the fin-rays." In the present example the elongation is complete.—*Geo. Harris ; Manse of Gamrie, Banffshire, April, 1851.*

The Bib, or Whiting Pout (*Morrhua lusca*, *Flem.*)—Of this fish several specimens have been brought to me within the last three months, varying in length, from six to fourteen inches.—*Id.*

The Spotted Gunnel or Butter-fish, (*Muraenoides guttata*, *Lacép.*)—This common species is the only one I have yet met with, in which I have had any difficulty in the

use of Mr. Yarrell's valuable work on 'British Fishes.' Though doubtless the same fish as that described and figured by him under this title, the examples I have met with differ considerably from both his figure and description. First, the dorsal fin commences in a line with the base of the pectorals. Secondly, the tail, when collapsed, is of a bluntly triangular form; when spread out, of a circular fan-shape, and altogether has a far less filamentous appearance than shown in Mr. Yarrell's cut. And, lastly, the head from the eyes to the snout seems more gradually tapered. In all these respects the specimens I have examined correspond better with the descriptions of those examined by Dr. Parnell. I believe it is well known that the skin of this fish shows great variety of colour. I have frequently met with examples in which it was dappled, with others, where it was broadly striped with alternate dark and light bands, and with others again, in which it was of a dingy olive with a tinge of yellow. I believe it is also well known that the dark spots on the dorsal fin of this fish become less distinct with age; but I have not seen any notice taken of another peculiarity which seems also dependant on that infirmity: I allude to the appearance of minute granular points or dots, irregularly but thickly scattered over the skin, and even the membrane covering the eyes. These dots vary in size, but are never larger than the head of a common pin; and they attain this size, so far as I have had opportunity of judging, on the pectoral and caudal fins only. Other specimens enable me to add that it appears to be on these parts that they begin. When taken between the fingers, the dots feel hard and gritty; their colour ranges from dark to reddish brown. *Quære*—Can the tail of a fish be reproduced after having been once lost? I consider myself warranted in saying that a specimen of the above fish in my possession enables me to answer this question in the affirmative. Judging from the proportions and general appearance of the specimen, it must have suffered an abridgment of not less than half an inch in its natural length. The figure of the body, the size of the terminating vertebra, and a well marked scar at the base of the caudal appendage, seem to put the matter beyond doubt; yet there is a distinct and regularly formed caudal fin, which however is perhaps scarcely one half the magnitude of its predecessors.—*Id.*

Occurrence of the Snake Pipe-fish (Syngnathus Ophidion) at Gamrie.—I procured the present specimen of this rare fish about a fortnight ago. Its length is nearly fifteen inches. It occurs to me that in addition to the position of the dorsal fin, the whole of which is somewhat in advance of the middle of the body (Yarrell's 'British Fishes,' p. 338), another good mark for distinguishing it from the still more rare species, *S. æquoreus*, must be the absence, or almost entire absence of a dorsal ridge. On the occipital plates there is nothing of the kind, and on the dorsal it is merely a faint trace. Under a lens these plates show very beautifully. Those covering the superior portion of the head are irregularly indented or punctulated, very much after a style observable in certain of the ichthyolites of the old red sandstone; while the plates on the back and sides exhibit this form of ornament on their corners or angles only, their central and larger portion being grooved transversely. The animal seems rather tenacious of life, and having kept it alive for some time in salt water, I was enabled at intervals to mark its respirations, which were uniformly about thirty in the course of a minute.—*Id.*

Occurrence of the Common Sturgeon in White Cliff Bay, Isle of Wight.—On the 20th of March, a large example of the common sturgeon was found near Black Rock, in White Cliff Bay. It seems to have got entangled among the shallows left by the receding tide. The fish bore evidence of having been in a sickly state, its weight

scarcely exceeding 80 lbs., with a total length of seven feet. It presented a fruitful source of speculation to our people, scarcely one of whom had seen such a thing before; indeed, the only instance of a previous capture in our neighbourhood, so far as I can learn, being eleven or twelve years ago, when a small one, about two and a half feet long, was taken in a net. — *Warner Varnham; Bembridge, Isle of Wight, April 7, 1851.*

Anecdote of a Pike.—In a former number (Zool. 2991) there is a note of a novel encounter between a pike and a goose, which reminds me of a similar one of which I was an eyewitness. On the 16th of August, 1850, a person and myself were down in some fields by the Trent, when we heard a loud noise as of a wild bird in distress. Hastening to the river-side, we soon perceived from what it emanated, and beheld a moor-hen struggling violently on the surface of the water, at perhaps forty yards distance. The cries of the poor bird were pitiful in the extreme; for it was evident that some animal in the water had got hold of its feet, and was trying to drag it under. A desperate struggle now ensued. The bird flapped its wings and tried to escape; the enemy as firmly kept its hold. Gradually the bird kept sinking lower in the water; the breast disappeared from view, and then the wings; its cries grew weaker and weaker; the head went down, and then all was still. What animal it was, whether quadruped or fish, that accomplished this curious feat, I could not tell. An otter, I think, it could not have been, as they are very rare here, and no individual has been seen that I am aware of. I can only attribute the theft to a pike; for one of large dimensions was known to frequent the place. If such was the case, it was a curious example of the voracity of this fish.—*John Joseph Briggs; King's Newton, Melbourne, Derbyshire.*

Occurrence of the Crested Blenny (*Blennius palmicornis*, Yarrell) *at Portland.*—On the 27th of February last, I obtained at Portland a specimen of *Blennius palmicornis* of Yarrell. I got it from a lobster-pot; it was two and a half inches in length. On the 7th of April, 1850, I obtained a specimen, measuring five inches, thrown up on the Chesil Beach. It was unfortunately so much damaged that I could not preserve it.—*William Thompson; Weymouth.*

Earth-worms and Grubs.—In Mr. Hussey's note on the destruction of earth-worms by grubs (Zool. 3059), that gentleman expresses a hope that other observers may confirm his statement, which I am happy in being able to do in one instance. In the summer of 1849, I was descending a mountain near Lake Windermere, in the middle of the day, under a very hot sun, when I saw an earth-worm, of the largest size, violently but vainly struggling to escape from a powerful grub, about an inch long, which had fastened its jaws into the worm. My inspection of the combat being rather a close one, appeared to cause the grub to relinquish the attack, which I have no doubt would have otherwise proved fatal to the worm.—*J. H. Gurney; Easton, March 4, 1851.*

Land and Fresh-water Mollusca found in the Neighbourhood of Fulham.—Thinking that a list of the various species of land and fresh-water shells found by me in the neighbourhood of Fulham might not be unacceptable to some of your readers, I have

sent the following. Many of them are common, but perhaps not the less interesting to those who are fond of the study of Nature, and whose attention may not have been hitherto called to this much neglected branch of Natural History, and which especially deserves the notice of entomologists, who, when in quest of insects, may also make shells a subject of their pursuit. Thus, a collector, while examining the oak (*Quercus Robur*) for insects, may take the beautiful little *Helix aculeata*, usually found on the trunks; this species may also be found under decayed wood. The hedges, lichens, mosses, fences, trunks and roots of trees, will not unfrequently furnish a variety of species. The young conchologist will be amply repaid by a visit to the British Museum, where he will find an extensive and admirably arranged collection in this department of science. Mr. Gray's edition of Dr. Turton's excellent 'Manual of Land and Fresh-water Shells' contains much valuable information on this subject; indeed, no student in this branch of Natural History should be without it. I might also name the admirable observations of Mr. Bridgman, of Norwich (Zool. 2741), which are well worth reading, besides localities where a great many species may be met with. Without trespassing further on your valuable journal, I proceed to give the list.

Bithinia tentaculata. Ditches, common.

Valvata piscinalis. Streams and ponds, uncommon.

Helix aspersa. In gardens, very common.

— *hortensis*. Hedges, common.

— *nemoralis*. In similar situations, common.

— *scantiana*. Hedges, common.

— *arbustorum*. Marshy places, common.

— *rufescens*. Under stones and on old walls, common.

Succinea putris. Marshy places and in streams on aquatic plants, uncommon.

— *amphibia*. Marshy places, common.

Zua lubrica. Under moss and stones, uncommon.

Azeca indens. One specimen under moss, rare.

Balæa perversa. Old walls, rare.

Lymneus palustris. Streams, rare.

Physa fontinalis. Streams, on aquatic plants.

Planorbis cornea. Ponds and streams, common.

— *carinatus*. In similar situations, uncommon.

— *vortex*. In similar situations, not common.

Cycas cornea. Streams, common.

I have no doubt many more might be added to the above list, if the river were examined. Fulham is not a good locality, in consequence of the absence of woods.—*Augustus F. Sheppard; Bellefield House, Parson's Green, Fulham.*

Proceedings of the Zoological Society.

Evening Meeting, March 25, 1851.—W. YARBELL, Esq., V. P., in the chair.

Mr. Gray called the attention of the meeting to two species of the genus *Herpes-*tes, new to the Fauna of Ceylon, which had been collected there by Mr. Grace, and transmitted by him in a living state to the menagerie. Mr. Lewis Llewellyn Dillwyn read a paper on the habits of an undescribed species of *Megapodius*, as observed by

his friend Mr. Motley, at Labuan. This species appearing to be identical with the specimens brought from the Philippines by Mr. Cuming, was characterized under the name of *Megapodius Cumingii*. Mr. Gould exhibited a mature specimen of *Trochilus Jardinii*, and described some new species. Mr. Adams communicated a Catalogue of the species of *Nassa* in the collection of Mr. Cuming. Mr. H. N. Turner communicated some observations on the suborbital gland in the Nylghiao. Mr. Yarrell communicated an interesting letter by Mr. Dajuid, of Kirkwall, on the occurrence of the deal fish in Orkney. The meeting then adjourned to April 8.

Monthly General Meeting, April 3.—E. S. RUDGE, Esq., F.R.S., in the chair.

W. W. Rawlins, Esq. and G. M. Fast, Esq. were elected Fellows.

F. Thompson, Esq. and G. R. Waterhouse, Esq. were proposed as candidates for the Fellowship.

The Report of the Council stated that the new buildings now in course of erection will be completed before the Anniversary, which takes place on the 29th of April. The accessions to the Menagerie include a fine example of *Grus carunculata*, the largest species of crane, secretary bird, and several other objects of unusual interest from South Africa and India.

* * * Since I transmitted to the Zoological Society the paper on *Distichocera* which is reported in the April number of the 'Zoologist' (Zool. 3091), I have, through the kindness of a correspondent, met with both sexes of a fourth and very distinct species, a description whereof will be incorporated with the paper in question, and a specific character whereof is appended below.

DISTICHOCCRA PAR.

Sexuum amborum color par: testaceo-fusca, *maris* capite prothoracisque disco saturatoribus; omnino pilis cinereis obsita. (*Maris* long. corp. .525 unc. elytrorum lat. max. .2 unc. *Feminae* long. corp. .7 unc. elytrorum lat. max. .2 unc.)

—Edward Newman.

Proceedings of the Entomological Society.

April 7th, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors thereof.—'The Zoologist' for April, by E. Newman, Esq. 'Hints on the History and Management of the Honey-bee.' By Edward Bevan, M.D. Presented by the author. A Portrait of the Rev. W. Kirby, on large paper; by W. Spence, Esq. Two copies of 'A Supplementary Catalogue of British Tineidæ.' By H. T. Stainton. Presented by the author. 'The Athenæum,' from July, 1850 to March 1851; by the Editor. 'The Literary Gazette,' January and February; by the publishers. Bred specimens of *Catocala sponsa*, *C. promissa*, *Triphæna fimbria*, and other British Lepidoptera; by Mrs. Vines. About 200 species of British Lepidoptera; by Mr. Douglas.

The following gentlemen were balloted for and elected:—Johan Wilhelm Zetterstedt, Lund: Honorary Foreign Member. H. J. Steuart, Esq., 76, Jernyn-street, and the Rev. J. M. Simkiss, St. Mary's, Oscott, Birmingham; Ordinary Members. Robert Patterson, Esq., Belfast, and J. C. Hyndman, Esq., Belfast; Subscribers.

Mr. S. Stevens exhibited a most beautiful specimen of the Lepidopterous *Cocytia D'Urvillei*, *Boisd.*; the only previous example being one in bad condition in the collection of Dr. Boisduval. He likewise exhibited, from a collection just received from Mr. Wallace, on the Amazon, *Papilio Columbus*, recently described and figured in the Society's 'Transactions' by Mr. Hewitson, and three new species of the genus *Papilio*. Also a specimen of *Gymnancyla canella*, which he believed to have been taken on the coast near Southend, being the second known British specimen; and *Dryophilus Anobioides*, bred from the same stump of broom from which he reared the insect last year.

The President exhibited living larvæ of *Æstridæ*, from reindeer in the Zoological Society's Garden. He observed that Linnæus stated from six to eight were the usual number on one deer, but in the present case there were from fifty to one hundred, and they were very conspicuous. Mr. Bracy Clark, in his "Memoir on *Æstridæ*" in the 'Linnean Transactions,' had given his opinion that *Æstrus Trompe* and *Æ. Tarandi* were only sexes of one species; but from the examination of specimens sent to him by Professor Zetterstedt, he could not concur in this opinion; moreover, *Æ. Trompe* was not found in the backs of reindeer, but in the frontal sinus. He also exhibited drawings of the head of the larvæ of *Æ. Tarandi* and *Æ. Bovis*, showing the mouth destitute of mandibles, and the larvæ could obtain nourishment by suction only; in this respect differing from *Æ. Equi*, in which mandibles were present.

The President also exhibited drawings made from the mutilated specimen of the parasite upon *Fulgora candelaria*, received from Mr. Bowering, and exhibited at the meeting last October. The venation of the wings was decidedly of a Lepidopterous type, and the legs were of a Lepidopterous character; the pupa also, as far as could be ascertained without divesting it of its cottony covering, appeared to be that of a Lepidopterous insect; but such an one was so anomalous, that more and entire specimens were greatly to be desired.

A note was read from R. Maysmor, Esq., Devizes, accompanying some cocoons of *Trichiosoma Lucorum*, stating that he believed the imago made its exit from the cocoon backwards; at least, he always found the exuviae remaining in the passage out, with the head in the interior of the cocoon, and there does not appear to be room for the insect to turn round in the skin it is about to leave behind.

Mr. F. Smith called the attention of the meeting to a very interesting paper intitled "A New Phase of Bee-life," recently published in Dickens's 'Household Words,' from which he read the following extracts, premising that the scene of the discovery was about 170 miles from the mouth of the Essequibo river.

"Seating myself on the smooth gray trunk of a tree, which lay prostrate across the sluggish water, whose broken limbs shone bright in the gay drapery of a scarlet-blossomed epiphyte, I lighted my pipe, and taking a book from my pocket, began lazily turning over the pages and lightly gleaning the pleasant thought of a witty and social poet. My attention now and again drawn away by the ceaselessappings of a yellow-headed woodpecker on a decaying tree close at hand, to the glittering flashes of a *Karabimitas*, a Topaz-throated humming-bird—a frequenter of dark and solitary creeks, capturing flies among the gay petals, for his nest-keeping partner, who, a few paces up the stream was gently swinging with the evening breeze, in her tiny home.

I had been in this position for some time, little regarding the whizzing hum of insects constantly passing and repassing—when, my gaze chancing to fall a yard or more from my resting place, I detected a small bright-gray bee, about the third of an inch in length, disappearing in what seemed a solid part of the trunk.

“There was no hole or crevice perceptible to the eye, nor did that portion of the bark feel less smooth than that immediately adjoining. I might be mistaken—nay! *I must be.* I had just arrived at this last conclusion, when a tiny piece of the bark was suddenly raised, and out flew the little gentleman I had seen disappear, or one too like him not to belong to the same family. The mystery was solved. Some ingenious bee-architect had devised an entrance-gate, fitting so admirably as to defy discovery when shut; while I was certain that I could lay my finger almost on the precise spot, the closest inspection failed to reveal any trace of its outline. The bark, though polished and even, was covered with faint interlaced streaks, from which even the smoothest bark is never free; and the skilful carpenter had adapted the irregular tracings of nature to his object of concealment. Wishing to inspect the workmanship without injuring its delicacy, I had to wait patiently until it should again fly open; nor was I kept long in expectation, for it presently popped up to permit the egress of another of the fraternity, and a ready twig prevented its descending. I found it designedly crooked and jagged at the edges, with an average width of about a quarter of an inch, and twice that in length: its substance was little more than the outer skin of the bark, and, being still connected at one end, opened and closed as with a spring. The cunning workman had no doubt been aware that had he made it much shorter—which the size of the passengers would have permitted—it would have required to be thrown farther back, when the greater tension would soon have destroyed the elasticity of the hinge, and, with that, its power of fitting close to the tree. Immediately within the doorway was a small ante-chamber, forming a sort of porter's lodge to the little surly gray-livered gentleman inside, who, without quitting his retreat, showed his displeasure at my intrusion in a manner too pointed to be mistaken, and certainly manifesting neither trepidation nor alarm at the sight of one of the ‘lords of the creation,’ though probably the first offered to his inspection. From the entrance-hall, two circular tunnels conducted into the interior of the establishment, from whence came the confused murmurs of a numerous and busy community. I had just allowed the door to close, and was admiring the exceeding neatness of the workmanship, when another of the family returned home, signifying his arrival, and obtained admittance in a manner at once novel and singular.

“After darting against the entrance, and touching it with his feet, he rose again into the air, and taking a wide swoop round the trunk, came up on the other side, this time, flying straight towards the ‘trap,’ which was quickly raised, when he was a few inches distant, and, on his entering, as quickly closed. The office of the pugnacious individual inside was explained; he was actually the door-keeper, and his returning comrades, having, like any other modern gentlemen, politely rapped, circled out of the observation of prying eyes, till he was prepared to admit them. Numbers were constantly arriving, and all went through the process I have described, each flying away, after knocking, in a different direction, but all allowing the same time to elapse before returning for admission:—thus, the door was never opened save at the proper moment.

“After watching their proceedings for some time, I discovered the reason of their not waiting quietly at the entrance. Sneaking among the stray leaves and rubbish in

the trunk and in the holes and cavities of the bark, were numbers of small insects, of the same colour as the bees, but with the addition of one or two minute bands of black across the abdomen; their slender, graceful forms and partially exposed ovipositors revealed, however, the cause of their slinking about, and stamped them the parasitic ichneumons of the hive. I thought that, after the habits of their tribe, they were endeavouring to obtain an entrance, when they pouncingly hovered over the bees as they were disappearing in the door-way; but, as none ever succeeded, I conjectured that they had devised and were pursuing some other plan of introducing their blood-thirsty progeny. Further observation showed this to be correct. The rascals were endeavouring to attach their eggs to the small pellets of pollen with which each bee was laden, and they often succeeded, in spite of the admirably devised tactics to prevent them.

"We were up and away down the sparkling river at daybreak the next morning; and I had no other opportunity of observing the economy of the bees and their enemies; nor in my rambles, did I ever chance to meet with another family of the same species, or with kindred habits."

Mr. Smith also read the following extracts from letters received by him from the author of the paper, hoping that some day the bee would be captured and examined by an entomologist.

"I think nothing more will be necessary than simply to attest the truth of 'A new Phase in Bee-life' to which you allude, and to add, that in recounting the facts therein contained, I used neither invention nor distortion, and but little embellishment. Indeed, that portion which describes the bee's workmanship and movements is nearly, and but little more than, a verbatim copy of rough notes of a day's gleanings, scrawled by the light of the hissing night-fire, as I sat in my hammock that same evening, scarcely a stone's throw from the scene of such rare instinct and sagacity. Johnston used oftentimes to quote the Spanish proverb,—'He that would bring home the wealth of the Indies, must take the wealth of the Indies with him;' and truly this aphorism could not find a better application than in my case. It has been, and ever will be, a matter of extreme regret, that when I took up my residence in British Guiana, I was possessed of so mean a knowledge of Entomology, and that, too, in a country so rich and so unexplored, and that seemed to promise such inestimable treasures to the investigator, and without a smattering of the science or technicology of the subject, by which alone the most careful observations can possibly be rendered intelligible, or any thing but useless to naturalists at home.

"In reply to your first question, as to the manner of conveying the pollen to the hive, I may state that the posterior thighs (tibiæ) were considerably expanded, and hollowed out into spoon-like cavities, in which the balls of kneaded pollen were steadied, or rather, secured by numerous stout bristles. The bee itself could but little have exceeded a quarter of an inch in length, and in form approximated more to the rounded humble-bee than to the oblong hive-bee; its colour was a light gray, and its body and legs were in some places profusely covered with hair of a light hue; though in the latter, as in the head, face, and breast, the black predominated. Such is the impression which my mind retains of its appearance, for I did not make any notes at the time, entering into the minutiae of size, form or colour, and write entirely from memory. I did not observe the eggs of the parasite on the pollen; their minuteness, similarity of colour and rapidity of deposition, baffling the unaided sight; but I judged of their intention, as you conjecture, from their movements. The eggs were certainly left either

on the pollen or hinder parts of the body or legs of the bee. I assumed the former as the more probable. I regret that I did not procure specimens of this ingenious insect, but my attention was almost exclusively devoted to the acquisition of the more brilliant species of Lepidoptera."

Mr. Smith then read a note on a nest of *Polistes Lanio*, *Fabr.*, lately sent by John MacGillivray, Esq. to the British Museum, from St. Salvador, where the wasp is abundant, the nests being formed under the eaves of the houses. In one of the cells he found a specimen of *Trigonalys bipustulatus*, *Smith*, not enveloped in any pellicle, and the wings crumpled up; nor had the cell been closed in any way, proving that it had never quitted the cell, and that *Trigonalys* is the parasite of *Polistes*,—a discovery of much interest, as showing the relationship of the insect to be among the Pupivora.

Mr. Smith also read a note on another nest, recently presented to the British Museum, of a social wasp, unfortunately without any tenants, the chief interest attached to it arising from its being constructed entirely of sandy loam, and the exterior being so hard that a saw used in opening one of its sides was blunted.

The following note by J. Mcintosh Esq., of Charminster, was read:—

"In the 'Proceedings of the Entomological Society,' October 7, 1850, p. 36, it is recorded that "Mr. Westwood, on the part of Mr. Gould, exhibited two insects he had found in Scotland, impaled on the spines of furze." And Mr. Westwood says "the subject of insects impaled on thorns required elucidation." Perhaps the following memoranda made by myself on this subject, may prove interesting to the Entomological Society.

"I have frequently taken from off the thorns of *Cratægus* and *Ulex*, the following insects:—1. *Pieris Cratægi*. This insect was alive, and had been driven against the thorn by the force of a gust of wind. The caterpillar also of this insect I have found in the same position. On one occasion I watched a caterpillar of this species crawl over a thorn, in doing which its weight, and a slight breeze of wind at the same time giving a motion to the branch, caused the sharp thorn to pierce the caterpillar, which, struggling about to relieve itself, worked the thorn through its body, by which means it became completely fixed. This was not a case of determined suicide, but an accidental death. That insects meet with their death by being driven by wind or rapid flight against the thorns or spines of trees, numerous examples have come under my own observation. On heaths and in plantations, caterpillars, by crawling over the sharp thorns or spines of plants, become in many cases pierced, and in their endeavours to escape only fix themselves the more securely, and become the easy food of some feathered enemy. 2. and 3. *Vanessa Urticæ* and *Cynthia Cardui*. The perfect insects I have taken from off the thorns of *Cratægus Oxyacantha*, on several occasions dead, but not in any way injured to lead me to suppose that they had been placed there by any enemy. If so, they would have been mutilated in some degree. 4. *Ourapteryx sambucaria*. An example of this moth I have taken from off the spines of *Ulex*, not injured. 5. *Coccinella 7-punctata*. I have met with frequent examples of this insect impaled on the spines of *Ulex*, and what is more curious, on the sharp leaves of *Araucaria imbricata* and *Abies Canadensis*, as well as on *Cratægus Oxyacantha*. I have taken specimens dead and very much mutilated, and others alive. 6. *Sarothrips ilicanus*. Specimens of this moth I have taken on the sharp prickles of the leaves of the holly, *Ilex Aquifolium*."

Mr. Spence read the following extract from a newspaper, called 'The Scientific

American,' dated March 22, 1851, "On the American Locust (*Cicada septemdecim*)," communicated by Dr. Gideon B. Smith.

"I have made this remarkable insect a special object of study for seventeen years, beginning in April, 1834. During the spring and summer of that year, I made a careful examination of its anatomy and habits, from the perfect larva state to the descent of its progeny in July and August into the earth. I have frequently found the larvæ since 1834, in the ground, where they went down in that year, from one and a half to two feet from the surface, in oblong cells, varying from an inch to two or three inches in diameter, and generally horizontal. These cells, however, appear to be moveable, that is, the insect digs the earth from one end and packs it in the other. The object of these movements seems to be to obtain fresh vegetable matter on which to feed. The insect obtains its food from the small vegetable radicles that everywhere pervade the earth. It takes its food from the surface of these roots, the moist exudation (like animal perspiration), for which purpose its rostrum or snout is provided with three delicate capillaries or hairs, which it projects from the tube of the snout, and sweeps them over the surface, gathering up the minute drops of moisture. This is its only food: the mode of taking it can be seen by a good glass.

"It does not puncture the bark, because it has no instrument for such a purpose, and therefore that they puncture the roots of pear-trees and thus kill the trees is erroneous. It is also an error to say, should a tree on which these larvæ have been feeding be cut down, the insects perish for want of food. If a place be found where trees grew in 1834, which were cut down, the land cleared, and even houses built upon it sixteen years ago, the locusts will be there *now*, and will be seen to emerge from the ground about the 25th of next May.

"The tract of country that will be occupied this year by the locusts extends from the Patapsco river in Maryland, to Buck's county in Pennsylvania, and from the Delaware river to the middle of the range of the Alleghany mountains, including Bedford county, Pennsylvania.

"There is another locust-district this year in Georgia and South Carolina, a small tract embracing a portion of these States, and another small one in Mississippi. I have the location of thirty from different districts, occupying fourteen of the seventeen years. The other three years are no doubt occupied in the western wilds of N. America, between latitudes $43\frac{1}{2}^{\circ}$ N. and 29° S., beyond which parallels I have not been able to hear of them. The locusts will appear about New York in 1860; this district extends to the Connecticut river East, and as far North as Washington Co., N. Y., West to Amsterdam in Montgomery Co., and a large portion of New Jersey.

"In the whole range of Natural History there is nothing more strange than the fact, — which has been established with as much certainty as any fact in Astronomy ever was, — that a little insect, not so large as the smallest ant, should pass into the ground, and remain there seventeen years, and then emerge a comparatively large insect; or that a certain tribe of insects should appear here in immense numbers, exactly once in seventeen years, always in the same month, almost on the same day, and same hour. It is indeed wonderful, but it is nevertheless true.

"The music or song produced by the myriads of these insects, in a warm day, from about the 25th of May to the middle of June, is wonderful. It is not deafening, as many describe it; even at its height it does not interrupt ordinary conversation. It seems like an atmosphere of wild monotonous sound, in which all other sounds float with perfect distinctness. After a day or two, this music becomes tiresome and dole-

ful, and to many very disagreeable. To me it was otherwise, and when I heard the last note on the 25th of June, the melancholy reflection occurred—shall I live to hear it again?

“Probably the first indication many persons will have of the approach of the locusts, will be the industry with which they will find the hogs rooting up the ground in the woods and fields. It is a great festival for them: and as soon as the insects appear above ground, chickens, turkeys, and all poultry will also have their feast. So fond are all fowls of these insects, that they will scarcely touch other food during the locust-season. This has a remarkable effect upon all hens’ eggs laid after the locusts appear—their yolks are nearly white. The chicken become very fat, and of fine flavour. Even the little wren will be seen flying off with a locust in its mouth, and all insectivorous birds have a great festival.

“From the 1st to the 20th of June, all shrubbery of value should be protected, either by covering it with cheap gauze, or in case of pot-plants, by keeping them in the house. About the 15th of June, the insects commence depositing their eggs; and about the 25th of June, the old locusts will have disappeared altogether.”

“In conclusion, people ought not to be alarmed. The insect has neither means of offence nor defence, and all the stories told of children being killed by their sting or bite are fabulous.”—*J. W. D.*

Entomological Localities. By J. W. DOUGLAS, Esq.

“Go with me; if you like, upon report,
The soil, the profit, and this kind of life,
I will your very faithful feeder be.”

As You Like It.

CHARLTON PIT.

If I were a geologist, I should begin a notice of this locality by speculating upon the various forces that have operated to place great depths of gravel upon still deeper strata of sand; it must suffice to say, that the soil was composed of sand and gravel; the removal of these during a long course of years has resulted in an excavation of three or four acres area, covered with vegetation of various kinds, and besides hosts of insects, is thickly strewed with the latest formation—boys. “Jolly as a sand-boy” is a phrase of which I never knew the meaning until I went to Charlton, and saw the frolics of rolling, tumbling, jumping and roaring of the young humans congregated there, whose maternal parents certainly must have been glad to think they were out, even if they did not know where they were. Let it not be thought I wander from my subject by introducing these boys to notice; they cannot be separated from the entomology of the place, as any one who goes there *must* test, very much to his annoyance or

amusement, as he may be inclined; and his disposition towards these squatters will materially influence the tone of their criticisms on his employment. This pit was the very Italy of a collecting-ground some years since, when kept private, but since it has been overrun by these Goths and Vandals, the number of insects has sensibly declined, and some species are likely to become extinct.

I will briefly enumerate some of the more interesting captures in Lepidoptera I have made here.

Trochilium Ichneumoniforme, much rarer than formerly. Taken by sweeping *Centaurea nigra*. The early states of this insect are, I believe, still a mystery, and afford a problem for some of our brethren to solve. It is always attached to the knapweed, and probably the larva feeds in the stem or roots.

Dicrorampha Artemisiæ, *Bentley*, is found upon *Artemisia vulgaris*, in July, and probably feeds upon that plant. Herrich-Schæffer and Freyer have figured as *caliginosana*, *Tr.*, a Tortrix which seems identical with this species; the *caliginosa* of Guenée is probably identical with the *acuminatana* of Zeller.

Dicrorampha Jacquinii, *Haw.*, found upon tansy (*Tanacetum vulgare*) in July. Mr. Doubleday gives this as synonymous with *politana*, *W. V.*; but I beg, with all deference to his research, to differ. *Politana* is taken all over the pit, and in many other places where no tansy grows; whereas *Jacquiniana* is found only in one part of the pit, where a few plants of tansy are, and the insect, *per se*, seems to my eyes to be distinct from *politana*.

Grapholita nigromaculana. Attached to the ragwort (*Senecio Jacobæa*), and found in July.

Ephippiphora Fenella, *L.* The larva feeds in the stems of *Artemisia vulgaris*, and the imago appears in July. The time occupied in the pupa state is very short.

Catoptria ——. A new species, probably either *decolorana* or *modestana* of Herrich-Schæffer. I found it here last August.

Eupæcilia ———, the *E. dubitana* of English collections, but not of Hübner, which has a white head, whereas our species has a black one. It does not appear to be known on the continent. Found in July and August.

Cochylis dipoltella, *Hübner*. Found in August.

Pempelia carnella used to be taken here, but is now almost, if not quite, extinct, thanks to the boys aforesaid.

Homæosoma sinuella. Rarer than formerly. Taken by sweeping, in July.

Œcophora lambdella. Rare. July.

Gelechia rufescens. July.

„ *Hermannella* and *næviferella*. On *Atriplex erecta* in July.

„ *Cirsiella*, *Dougl.*, (*Sta. Cat. Supp.* p. 4, No. 67). Bred from larvæ, miners in thistle-leaves, last August.

„ *Atripiciella*, taken by sweeping, in July.

„ *Gerronella*, one among broom at the top of the pit, in August.

Gracilaria omisella. Larva feeds in leaves of *Artemisia vulgaris*. I found the species here two or three years since, flying at dusk among thistles and *Artemisia*.

Depressaria nanatella. I took two specimens here August 12, 1846, and have never been able to find another, though I have often looked.

Depressaria atomella, I found on the broom in the wood at the top of the pit, by searching it with a light at night last August; and have no doubt the larva feeds on that plant.

In Coleoptera, several rarities have been found here by Mr. S. Stevens and others, (see *Zool.* 749).

J. W. DOUGLAS.

2, Eton Grove, Lee, Kent,
April 19, 1851.

Notes on Observations in Natural History during a Tour in Norway.
By the REV. ALFRED CHARLES SMITH, M.A.

(Continued from page 3106).

THE Reindeer, (*Cervus Tarandus*). Having given some account of the tame reindeer in a former paper (*Zool.* 3103), I now purpose to say something of this noble animal in its wild state, when it wanders over the mountains and fjelds without control, and being to-day close at hand, perhaps tomorrow will be a hundred miles away.

I was in the glorious valley of waterfalls, the Romsdal, when one evening an old mountain hunter came to me, and proposed a two days' expedition to hunt reindeer in the fjeld above, where he had heard they were unusually numerous, and where he had himself killed one a few days before. I soon arranged to meet him the following morning, and having persuaded a friend to accompany me, and taking ano-

ther guide to carry our provision-box and blankets, off we started up the mountain side. There had been a drizzling rain all the morning, and the mountain was very steep and rocky, and difficult to climb, so that after about five hours' hard walking and clambering in the rain, and much doubting whether there really were any reindeer in these fjelds, we began to grumble at the expedition. However, the day cleared up at noon, and soon after, as we rounded a rock, our guides, who were always keeping a sharp look-out with their telescopes, beckoned to us to crouch down, and pointed to three black spots in the snow on the mountain-side, some two miles off, exclaiming in a whisper the single word, "reins!"—which piece of information, thus laconically expressed, had the magical effect of making us hurry towards them in a crouching posture.

Who but a Norwegian huntsman would have so instantly discovered three such small specks to be reindeer? Yet on looking through our telescopes we could distinctly see them, as they were lying in the snow; an old buck above, as guard and watchman, a doe and fawn (or calf, as they call it there) a little lower down: we could even see the large branching antlers of the old buck. Now we retreated behind a large rock, and prepared for a stalk, and then set off in a contrary direction to the deer, intending to wind round the mountain and come upon them from another point: but we had a large flat valley to cross in their full view, and though so far distant from them that they still appeared as spots to us, we must be very quiet and cautious, and walk in a line, one behind the other, with our heads stooping down, our guns at our sides, lest the sun should shine on the barrels and betray us; our hats in our hands, and not venturing to speak above the gentlest whisper. We had almost gained the mountain, and were wading through an intervening torrent, and over the rocks upon its banks, when the old buck apparently caught sight of us, and sprang up from the snow, and then walked leisurely off to the hill-side, followed by the doe and her fawn, and went over the next rock out of our sight.

I was greatly disappointed, and should have given them up for lost, but the old huntsman knew better: he told us that now was the time to make haste; so on we go, as fast as the rocky nature of the mountain-side will allow us, and scramble over huge loose fragments of rock, without making any noise, and scarcely daring to breathe, (for we are now within half a mile of the deer). Now we have passed the snow on which we first saw them lying, and have another exposed gully to cross: here we advance very cautiously and snake-like indeed, with

our bodies crouched down to the rock, our heads bent forward, our hats and guns held close to the ground. First went the huntsman, who had put on a large gray cap, and a Jersey speckled black and white, the exact colour of the rocks; his keen eyes scanning every stone in advance, and his light active limbs springing from rock to rock, now running along the huge masses of broken rock which lay in our route, now dropping noiselessly down from some larger fragment. I followed, and found some difficulty in keeping up with him over such difficult ground, where the least noise would have been fatal to our sport. Next came my companion; while the guide brought up the rear. Safe across the gully, without being seen, away we go, swiftly but noiselessly, towards the rock over which we last saw the reindeer move. Now we gain the very spot where they had but just passed, and now, very slowly and cautiously, and looking intently in advance at every step, we near the top. There is a large projecting piece of rock in front of us; we creep towards this, and thence peering out with the greatest caution, the huntsman spies the three deer, not a hundred and fifty yards off, browsing the moss on the rock. Slowly he retreats; and one by one we take his place to gaze, with uncovered heads, and our eyes only peeping over a great stone. There is a large patch of snow between us and the deer, so that to advance nearer to them is impossible, but they are too far off for a shot with a smooth bore; so the huntsman descends the mountain a few steps, and lying at full length, crawls along the ground, or rather wriggles himself along, like a serpent, or perhaps a Red Indian, and tries to get round the deer, whence he can drive them towards us. Meanwhile we take up our several positions behind certain projecting rocks which conceal us, and lying at full length behind these, occasionally peep over the tops at the deer, which have now left the rock and descended on the snow, approaching nearer to us at every step. This is most exciting! For a quarter of an hour we lie behind our friendly rocks, scarcely daring to breathe, lest the deer should hear us — scarcely daring to peep, lest they should see us; fortunately, the wind is directly from them, so they cannot smell us. During all this time the huntsman, under cover of the hill, is urging himself along, seeking to get round them; while our other guide is lower down the mountain, holding an old deer-hound we had brought with us. At length, crack goes the huntsman's rifle; up we jump, gun in hand, and see the old buck trotting majestically towards us over the snow, his head thrown up into the air, not at all in a hurry, and followed by the doe and calf. I fire both barrels at the buck; still on he goes as

if untouched, but quickening his pace a little ; soon however he stops and turns round to stare at us leisurely ; then onward he quietly trots again, followed by the other two, and, soon rounding the hill, is lost to our view. We are much disappointed, thinking he is not touched, but, loading again, prepare to follow him, although with little hope of seeing him again. We have not advanced far in pursuit, when to our great delight, and not a little to our amazement, for he showed no sign of being hit, we see drops of blood on a stone in his track, then more, then still more, then a little pool of blood where he had stood to gaze at us : we see that one of us at least has hit him hard, and our spirits rise. It is easy now to track him by the blood, which is on every stone over which he has passed ; we put the dog on the track, but the beast is useless, and will not take it up : but no matter ! — there is so much blood we can track him ourselves : so we follow for about half an English mile, when beyond a rock in front we can see the top of his back. Now we advance again very cautiously, and crouching down to the ground ; but, as we get nearer, we find caution unnecessary — the deer is dead : and brandishing our guns over our heads, and with loud shouts such as the wild fjeld seldom hears, we are soon by the side of our prey : he is quite dead, the fatal bullet struck him in the middle of the belly. We look around for the doe and fawn, but they are nowhere to be seen ; they have left their lord to die alone, and are probably many miles away.

After admiring the goodly size and the splendid antlers of our prey, we soon set to work at him after Norwegian custom. And first, to take off his skin : each armed with a hunting-knife, or small dagger with a hilt, the invariable and most useful weapon in the belt of a Norsk huntsman, and each taking one leg, and beginning at the foot, we proceed to strip him of his skin. After half an hour's hard work the skin is removed ; this being done, the huntsman and guide proceed to open him : we leave that to them, as well as the task of burying the skin under one heap of stones, and the body under another, this being the regular custom in Norway, lest the bears and wolves should devour them during the night, or before a horse can be brought to convey them home ; for we are now many miles from the nearest house. And now, giving strict charge to our men to bring the heart and one leg to the place appointed for our night's quarters, we replace the bullets in our guns with shot, and proceed to shoot ptarmigan for the rest of the afternoon. In the evening, we make a great feast off reindeer leg and heart, cut off in slices, and toasted by each for himself on the point of his hunting-knife in a blazing fire. We find the

heart by far the most tender and good, the leg being extremely tough, and no wonder, seeing how recently the animal had been killed.

Next morning we are off again very early in search of game. During the day we discover two more herds of deer, one consisting of five the other of seven head; neither was visible without the aid of the telescope. The huntsman computed them to be a Norsk mile (or seven English miles) distant from us. As both herds were on a snowy mountain, and near the top of it, where there was no rock or other cover to give us a chance of approaching them, we did not attempt to get near them, but contented ourselves with watching them for some time through our glasses, as they were moving about, or lying in the snow; and then finished our expedition by lighting upon a capital ptarmigan ground, and by bagging seven brace of these glorious birds.

ALFRED CHARLES SMITH.

Old Park, Devizes,
May 5, 1851.

(To be continued).

Capture of a Whale off Lynn Regis.

By the REV. ALFRED CHARLES SMITH, M.A.

THE interesting account of the recent capture of a whale near Lynn, given by Mr. Newton (Zool. 3107), reminds me of a similar event which I was fortunate enough to witness in the summer of 1842, at the same place; indeed, Lynn seems to be particularly favoured by the visits of these monsters of the deep, for that one whose capture I witnessed was by no means the first that had been killed there within the memory of man. The story of his capture was curious. Two fishermen had started in their boat before daybreak, and were pulling down the river. Now, it is the custom of the Lynn fishermen, in consequence of the perpetually shifting sands, when they go out before daylight, to have a man at the boat's head, with a light pole in his hand, sounding the sands; and this was the case with our fishermen, when they suddenly struck their pole against something hard, which they knew could not be a bank, though they had little conception at first what it really was. However, they soon perceived it to be animated, and then were not long in discovering it to be a whale that had stranded himself in the channel, having come in with the tide, and being left at low water, unable to find his way back. No sooner had

they ascertained this, than they immediately resolved at all hazards to secure so rich a prize ; and knowing that no time was to be lost, and that if the whale was to be despatched it must be done before the tide again arose, and so enable him to get out to sea, they set to work at once. Now the only arms they possessed were their knives and anchor-cable, so that their chance of killing the whale seemed small indeed. However, nothing daunted, they resolved to await the arrival of other boats, in the hope that one of them might bring some better weapon, wherewith to despatch the monster of the deep ; meanwhile, by way of doing something, and in order that their treasure might not give them the slip, and sneak off to sea in the dark, they just made fast one end of their cable to the boat, and lashed the other round one of the fins of the whale. He seems to have been a good-natured, placid, easy-tempered fellow, for he did not resent this as an impertinence, and indeed up to this point seems quite to have entered into the sport ; for when firmly attached to the boat by his fin, and as the tide was now rising and gave him more room, and he began to grow impatient at the non-arrival of more boats, by way of diversion, and to change the scene, away he started down the channel in which he had been stranded, and took the boat, and the now somewhat terrified boatmen, away with him at a fearful rate. Fortunately for the fishermen, he did not go straight down the channel, or he would soon have been in deep water, and out to sea again, without a chance of being captured, even if he did not upset the boat and drown the men, which was by no means improbable : however, he took the wrong turning, and soon stranded himself again in water shallower than before.

This little *divertissement* had been just enough to show the boatmen that he was a monster of considerable power, and that although lashed to their boat, he was not yet their prey ; so, being now joined by several other boats, though none brought them any other weapons than knives, they resolved to attempt his death with these insignificant tools. So one of our hardy boatmen (setting the example which was so well followed by Mr. Gordon Cumming, in slicing out of the living hippopotamus a handle to hold on by, whilst being towed about in the water), coolly begins to cut a hole in the whale's side, through which when large enough he hoped to thrust his hand, until the knife should reach some vital part. How long the whale entered into and approved of this sport, I cannot say ; this was rather a sore trial to his good nature, and indeed he seems to have lost his temper at this point, and to have lashed his tail, and spouted out water, and made such a

commotion and noise, that the boats were nearly upset, and the fishermen found that such attempts to take his life were not likely to be successful. They were in this situation, when a coal-brig, coming in with the tide, passed within sight of the unusual and unequal encounter, and the captain ransacked his vessel for the most deadly weapons he could send them; however, all he could do was to fix a bayonet on a mop-handle, and with this the intrepid fishermen renewed the attack, and persecuted the unfortunate whale. But though they could do him no mortal injury, they succeeded in causing him to play such antics, and to create so great a commotion in the peaceful waters of the Wash, as attracted the attention of the men at the look-out in the harbour of Lynn, some eight or nine miles off. What further attempts after the same manner these hardy fishermen would have resorted to in order to secure their prize, which they were firmly resolved to obtain, I cannot say, for now a long spit was sent to them from Lynn, and with this the monster was despatched.

Meanwhile many hours had elapsed since the first discovery of the whale by the boatmen, and news of the stranger having reached Lynn, many boats started for the scene of action. It so chanced that I was going out in a friend's yacht at the moment the news arrived, and of course we lost no time in hurrying to the scene of action. Just as we reached the boats, which were now increased to the number of about twenty, his death struggles began, and it was a grand sight to see his terrific plunges, the water lashed into foam by his enormous and powerful tail, the whole sea around in commotion, and the volumes of blood and water which he spouted in his agonies before he was ignominiously slain by the spit! Now he plunged down and almost overwhelmed the boats in the storm he raised; now he reared his enormous head out of the water; now with his great black tail he lashed the waves; now with a prodigious effort seemed to throw himself almost out of the sea; while two huge fountains of blood and water spouted from his nostrils half-mast high, and the surrounding boats reeled and trembled, and were well nigh upset in the confusion.

When quite dead he was towed into Lynn by the whole fleet of boats. Ropes were passed from boat to boat, and finally to our yacht, which took the lead; and with flags flying and much cheering, we moved along, a triumphant procession, into Lynn harbour.

I forget what were his dimensions and supposed weight; I only remember that I thought him a very Leviathan, and that he brought in a great deal of money to the fishermen: though from the number of boats in at the death, all of which claimed a share in the prize, I fear

the two brave and adventurous men who first discovered the whale, and ran such risks in his capture, were not sufficiently remunerated as they deserved.

ALFRED CHARLES SMITH.

Old Park, Devizes, May 8, 1851.

Instinct of a Dog.—A certain cattle-dealer in Irvine is frequently in the habit, when visiting Ayr market, on Tuesdays, of leaving his dog behind him. On these occasions, upon missing his master, the animal has been frequently known to take the next train to Ayr, visit the cattle-market, and not finding the object of his search, return again to Irvine. His conduct has often attracted the notice of the guards on the line, and his movements have been watched; but we have not heard by what class he is accustomed to travel, and at what rate he is charged.—*Ayr Observer*.

Curious Capture of a Pair of Polecats, (Mustela Putorius).—In an out-house belonging to my neighbour, the Rev. E. Rust, there is a large cistern, which formerly was used for malting purposes, and from which there is a communication with the ground outside, by a hole in the wall. About a month ago, one of the servants found this cistern occupied by a couple of polecats, male and female, who, no doubt on murderous thought intent, followed each other through the hole in the wall, but were unable to get back. They were of course slaughtered with sticks and staves, to which performance I believe many hands were summoned.—*C. R. Bree; Stowmarket*.

Remarkable Effect of Training in Cattle.—Spending a few days in the Glenkens, a romantic district in the south of Scotland, and travelling in company with a friend, he directed my attention to a cow grazing in a field close by, partly oats and partly meadow. She was eagerly feeding on the grass by the side of the corn, with nothing to prevent her from eating the latter. Such a thing was quite new to me, and I could not imagine how to account for it. But my friend explained the mystery. "She is," said he, "an Ayrshire cow, and when young had been herded in pastures close by the corn, and kept from eating it, till under this restraint the inclination for it had disappeared. I have seen," added my friend, "in Ayrshire, the cows with their very horns in the corn while feeding, without injuring it." This is certainly a remarkable result of early training.—*Correspondent of the Leeds Mercury*.

Poison from the Blow of a Platypus.—The following notice of poison from the blow of a platypus, will interest the scientific reader.—We have been favoured with the following communication from Mr. Anstey, giving an account of the extraordinary effect of the blow of a platypus. We insert it in the hope that the attention of naturalists may be directed to the circumstances, as it would be well worth while, by a series of experiments, to determine the virulence of the poison contained in the spurs of this curious animal. "On Monday morning last, a man named Cooper, employed by Mr. G. C. Clarke, as gatekeeper at Interlachen, discovered a platypus asleep in the small stream connecting Lake Crescent and Sorell. He grasped it by the neck with his left hand, and was instantly struck by the creature's spurs on the upper and under sides of his wrist, the wounds being about an inch in length and skin deep. He succeeded in killing it, and at once proceeded to another establishment of Mr. Clarke's on Lake Sorell, called the 'Dog's Head,' distant about four miles from Interlachen. By the time he arrived there his arm had very much swollen, and he complained of great pain all the way up it. Fortunately for him, a party of gentlemen arrived at the

Dog's Head shortly after, one of whom was a medical man. By this time Cooper's arm had greatly increased in size, his eyesight had nearly failed him, and his face grew black. His wounds were lanced, bathed with brandy, and, in the absence of any stronger remedy, a large quantity of raw brandy was administered to him internally. For many hours the poor man was in great danger, but ultimately the antidote triumphed over the bane; and the next morning nothing remained but a little swelling of the arm below the elbow, and some soreness in the spur-wounds. An hour after the platypus was killed, we were able to squeeze some liquid out of its spurs, but were not able to test its effect on any living thing."—*Hobart Town Courier*.

*The Cockney House Sparrow and the Early Breakfast-shop.**

MY DEAR GOUGH,

You know that Wordsworth describes London as a "wilderness of building," and no better description can surely be given of this huge Babylon. The human habitations of London are upwards of 300,000, and, adding to this number all other descriptions of buildings, you make up a sum of *five hundred thousand*—half a million of edifices; a "wilderness of building!"

It is a curious fact—first noticed, I believe, by the celebrated Hone—that in *every* street in the city of London you may find a tree, or catch sight of a tree. I thought this so improbable, that I have wandered through many a street to test its accuracy; and I believe it is almost a true saying. Still, London does not by any means present a *sylvan aspect*, for as "one swallow does not make a summer," so one tree does not make a sylvan street!

Tavistock-square, St. Pancras, is in the very centre of this huge metropolis, being one of the "lungs" and therefore properly located in the "chest" of the sprawling giant town. At the south-east corner of this square stands a solitary *plane tree*, well freighted with branches and with foliage in the season. Throughout the spring and summer this plane tree is vocal all day long with the simple song of the house sparrow (*Fringilla domestica*). So numerous are these birds among the leaves in summer, that the tree is literally alive and black with them, and many a scuffle takes place on some of the shadiest twigs for standing room. The summer sun, daily coursing from the zenith to his western horizon, pours his hottest beams upon this place, and the surrounding buildings converge them to a focus, straight upon

* In a Letter from Cornelius Nicholson, London, to Thos. Gough, Esq., Kendal, April 3, 1850. Read at the Kendal Natural History Society, and communicated by William Spence, Esq., F.R.S.

this solitary *plane*; so the contest among the sparrows is to try which can get standing room under the umbrage of a leaf. They build their nests mostly in the chimney-stacks and chinks of the houses close by, but those places are too hot for them during the afternoon of a summer's day.

Among the many ways in which the working classes of London minister to the wants of each other, and provide for their own necessities; among the many occupations practised in London, but unknown in the country, is that of the keeper of a *moving coffee-shop*. This useful merchant is the first to light his fire, of all the fires that are daily kindled as so many shrines dedicated to Mammon. He takes his station at a corner which bisects two streets, where streams of passengers first begin to flow; and there he retails *a cup of coffee for a halfpenny, and a slice of bread and butter for another halfpenny*, which pennyworth of beverage is, I am told, the total breakfast of many a hard-working man. The caravan which composes this peripatetic breakfast-shop, is a long, flat, double-handled wheelbarrow, with an awning, which can be put on and off at will, as the wind or the weather may make it desirable. One of the steadiest merchants in this line of business in all London is PATRICK CORBETT, who takes up his position by four or five o'clock of the morning in summer, and by the first glimmer of daylight in winter, at the south-east corner of Tavistock-square, exactly *opposite the plane-tree* which I have introduced to your notice. Among the sparrows, which I have said "most do congregate" in this tree, is one — a female — between whom and our coffee salesman, Patrick, there has long existed a most intimate and interesting friendship. This bird is distinguishable from the rest (setting aside her familiarities with Patrick) by having a peculiar-shaped crest, and a few very dark feathers behind the nape of the head. Although this sparrow is a female, the old man always calls her "Dick," after the manner of children, who, as you know, call all *little* birds "Dicks." The friendship between Patrick and "Dick" has now lasted nearly four years, and, with the exception of the space of about two or three months (which I will particularly relate), the two friends have, for all this period, every morning without fail breakfasted together, and held sweet converse together over their morning meal! Old Patrick cannot tell how the attachment between "Dick" and him first exhibited itself, or which of them made the first overtures. For the sake of female "honour," one would fain hope that Patrick made the first advances, and so gradually won the confidence and justified the familiarities of Lady Sparrow. I know not how much coyness, and diffi-

dence, and delicacy she possessed before the intimacy with Patrick sprang up, but *certes* she is *not over modest* now! From her perch in the plane tree she will drop down upon a lump of bread and butter, as an eagle drops upon his doomed prey. She takes possession of either the upper or lower story of the coffee-shop, and struts about with as busy an air as if she were both cook, scullery-maid and waiter all in one. She will either eat bread and butter from Patrick's fingers, or sup the coffee out of his cup. She will sit in his lap without a blush, and kiss his hand "before folk." Now, you might find some excuse for such levity as this in a young, romping, girlish bird of unsophisticated life, but "Dick" we know to be the mother of at least fifty to sixty children! And I believe that that mark on the head which I told you distinguishes her, is nothing less than the bump of philoprogenitiveness! She has three broods of young in the course of a season. As soon as her offspring have ripened into the era of bread and butter, she asserts greatly *increased claims* upon the coffee-shop, so that at this time there may truly and literally be said to be a *great run* upon Patrick's establishment. It is a continuous flight and counterflight between the bird's nest and the breakfast shop for two whole hours of a morning; in some journeys, "Dick" contenting herself with what may properly be termed *a crumb*, and at other times carrying off what in Westmoreland would be called "*a shive*." She seems to have no compunction in being beholden to Patrick's store for the whole means of subsistence for herself and numerous progeny. She appears to think and act as if the breakfast-shop were wheeled to that favourite corner of the Square for her special use and behoof. Every morning it comes—every morning she feeds herself and her offspring, and the liberal soul of a coffee-man never cries "Hold, enough!" Sometimes, in winter, when the cold winds whistle through the streets, and darkness has set in so thick throughout the night, that feeble, struggling daylight can hardly penetrate the murky gloom—sometimes, at that hungry season, if the old man with his coffee-shop should be a few minutes behind his time, *waiting for daylight*—at such seasons, and under such circumstances, "Dick" has often set off from Tavistock-square, and gone through Tavistock-place, and the whole length of Compton-street into Judd-street, *to meet her morning companion and friend*! When "Dick" has, at the end of this journey, saluted Patrick with a chirp, she perches herself either *beneath* or *upon* the awning of the moving coffee-shop, and *so rides home*! This has not been done merely once and casually, but frequently and regularly as Patrick has been behind his usual time!

Whilst "Dick's" offspring are unfledged and unable to leave their nest, she carries the bread and butter up to their dormitory. When they can fly *a little*, she places them on the string-course of the house in Tavistock-place, and carries their food to them there. So soon as they are strong enough on the wing to compass the distance between the chimney-stack and the ground, she then conducts her young ones to within "a respectful distance" of the coffee-shop, where she and Patrick together help them to their morning meal. Once upon a time she brought down three young ones, one of which was so weak that it could not rise again, and Patrick, in pure compassion, took the little sparrow away to his home. Unfortunately, however, it died in the course of the day. A complete change now took place in the conduct and demeanour of "Dick" towards old Patrick. She alighted from her perch in the plane tree, but not, as before, under the domestic roof of the coffee-shop. She alighted in the street, and kept at some yards aloof from Patrick. In vain he called, "Dickey, Dickey, Dick, Dick," to come to him. In vain he coaxed and cozened; in vain he threw lumps of soft crumb, buttered on both sides; "Dick" spurned all entreaty, and all offers of reconciliation. The former sweet chirp of affectionate confidence was changed to a harsh note of remonstrance and reproach.

"You need not ask Jean Jacques Rousseau,
Whether birds confabulate or no."

Patrick knew and felt the force of everything that poor "Dick" uttered, and he quite despaired, as he told me, of ever regaining the lost esteem of his bird. But time is said to be a cure for the heaviest griefs; and, by and bye, "Dick" produced another brood of young ones. The new joys of a mother caused her to forget her former loss, and to forgive the kidnapping delinquency of old Patrick. The alienated friends now again embraced one another, and any Londoner who will get up betimes in a morning, may, by repairing to Tavistock-square, see what a happy breakfast party is there composed of old PATRICK CORBETT and the COCKNEY HOUSE SPARROW!

I am, Dear GOUGH,

Yours faithfully,

CORNELIUS NICHOLSON.

55, Bernard-street, Russell-square,
London, April 3, 1850.

*Extracts from the Correspondence of Mr. H. W. Bates, now forming
Entomological Collections in South America.*

(Concluded from page 2966).

“Ega, Upper Amazons,

December 23, 1851.

“After waiting many weary months, a vessel now leaves Ega for the city (Parà), and I avail myself of the opportunity to send my collections. From July to the present month it is a very rare case the departure of canoes from here down river, as during these months the strong trade wind from below prevails, rendering the voyage not only very protracted but dangerous, as the only means of progressing down river is by tacking constantly across stream in the teeth of the wind. During all this time too I have not been able to move from here, the £40 you sent me in January I did not receive till the end of October, thus I was quite unable to undertake a voyage further up river. I have now, I believe, received all letters from England, down to the date of yours (accompanying letters from my family) of August 16; one packet I received at the end of October, another on the 7th of this month (with £30), and a third yesterday. With the exception of two months, I have spent all the time since the 1st of May in this villa, and have led a life unsupportably wearisome from the want of society, books, &c. Insects are very scarce in individuals, as everywhere else in these dense virgin forests; but the variety of species is wonderful, and conspicuous new things are constantly turning up. The other day I arranged the fine *Titanus* which I now send. In respect of the other branches of natural history, nothing is to be done, except perhaps in birds, which cannot be followed up without *hunters* (here impossible to be found for any amount of wages). Shells there are scarcely any, either living or dead. I have noted well your advice in the various kind letters you have sent me, and in the collecting of insects, believe I have followed it to the letter. Of reptiles, fishes, &c., I have had excellent opportunities to arrange extensive series during the two months I spent in excursions with my friends here out on the Amazons; but my cash was reduced to so low an ebb, that I dared not lay out the amount of 15s. or 20s. in spirits and vessels necessary. In one excursion we were thirty days out in a canoe, with ten Indians, every day with drag-net, on the edges of the vast sandy beaches upon the Amazons, and in the small lakes buried in the depths of the fo-

rest, in search of fish and turtle for our daily subsistence, and I was always regretting not to have means to preserve the many curious little fishes that turned up. The *Lepidosiren* never appeared. I know the shape of the animal well, from being interested in it in England, and have made inquiries after it from Pará to here, but found no one who could give me any information about it.

“With respect to remaining longer in this country, I was for some time undecided, but on the receipt of letters from home yesterday, I have well weighed the arguments of my father, and have resolved to return to England. Whether I shall be able to settle down to quiet life or not, I am still doubtful, at any rate, if I choose I can come out again, and with better arrangements for making a voyage of the kind interesting. Ega, I know, is an excellent station: from here there are opportunities to explore many interesting regions. By taking half the expenses of the voyage, I could arrange with any trader for the *Japurá*, and could ascend to the frontiers of *Nova Granada*, a voyage there and back—working on the way—of nine or twelve months. I could do the same with the river *Juruá*, on the south bank of the *Amazons*. A voyage which had greater charms for me was to *Peru*, to the cities of *Moyabamba* and *Chachapoyas*; in the mountains between there and here there is sometimes communication. Two civil young *Peruvians* were here from those cities a few days ago, and would willingly have taken me with them, sharing the expenses. I made every inquiry as to the voyage &c.; they informed me that with eight or ten good *Indians*, a small canoe takes three months and a half to work up against the stream to *Balsa Puerta*, on the river *Huallaga*. From *Balsa Puerta* to *Moyabamba* is five days by land, climbing up the steep sides of mountains, &c. The whole country to there is very healthful. *Moyabamba* is a populous but poor district, with plenty of *Indians*, more active and desirous to gain than the idle scoundrels at *Ega*; living is poor but cheap, and the people peaceable and trustworthy. *Chachapoyas* is eight or ten days further than *Moyabamba* by land, and surrounded by mountains capped with snow; the society is refined and living expensive. This voyage is practicable, as you see, but excessively tedious; three months and a half constantly tormented by mosquitoes, *Tabani*, &c., with no society but dull *Indians*, speaking the *Inca* language, or *Lerjoà Gual* of the *Amazons*, is scarcely to be borne, except in the company of a sympathetic companion, both very enthusiastic and with resources to amuse &c. I am not only without companions, but without books or maps, and rather wearied with three years’ constant entomologizing. The other

voyages to Japurà &c. have this one drawback, they are subject to a severe kind of fever and ague. I know of no one who goes there that escapes the disease; it is seldom fatal, but serious from the utter prostration of strength that accompanies it. I entertained therefore this alternative, Moyabamba or home, and from the reasons mentioned decide on the latter; and if I really cannot settle at home, I can still make the excursion, as the expense from Parà to Moyabamba is not great. As I do not wish to arrive in England during the cold weather, I shall entertain myself in the voyage down river, so as to reach England at the end of April or beginning of May. I shall purchase all the curious live animals and birds I meet with, though I assure you there are very few to be had. The collection now sent is one of the best that I have been able to get together.

“December 31st.—I have not written any articles for the Magazines, for the reason that I have no means of ascertaining the scientific names of the species, or of knowing what has previously been written concerning them. I have abundance of materials for many interesting articles, which I am reserving for use on my return. Mr. Wallace, I suppose, will follow up the profession, and probably will adopt the track I have planned out to Peru; he is now in a glorious country, and you must expect great things from him. In perseverance and real knowledge of the subject, he goes ahead of me, and is worthy of all success. The vessel I suppose sails tomorrow, what more I have to say, I hope I shall be spared to relate *in propria personâ*.

“HENRY W. BATES.”

Note by Mr. S. Stevens.—Mr. Bates has not yet returned, but from the tenour of his letter we are daily expecting him, and trust he will return safe and sound. The collection now sent is *unquestionably the finest and most valuable* of all that he has sent. It contains, for the quantity, a wonderful amount of novelty and variety, and has fortunately arrived in superb condition. Amongst the butterflies most conspicuous, is a splendid *Charaxes* and the glorious *Callithea Batesii*, *Hætera Andromeda*, and a singular new *Papilio*, which at first sight has the appearance of a *Heliconia*. The Coleoptera contain five fine species of *Megacephalus*, including the gigantic and rare *M. Klugii*, and a number of new and beautiful *Longicornes*, *Curculionidæ*, *Staphylinidæ*, *Chrysomelidæ* &c.

SAMUEL STEVENS.

Occurrence of the Osprey in Norfolk.—Three specimens of the common osprey (all freshly killed) have been sent into Norwich to be stuffed during the past week. — J. H. Gurney; Easton, May 3, 1851.

Note on the Great Eagle Owl nesting in confinement.—I have already had the pleasure of noticing in the 'Zoologist' (Zool. 2849) the curious fact of a pair of great eagle owls in the possession of my friend, Mr. E. Fountaine, of this parish, having nested, hatched, and brought up their young, in confinement, in the two successive years of 1849-50; and I am now happy to be able to state, that the same birds have again produced and hatched three eggs: the season and period of incubation being identical with the dates mentioned by me in my notice on the subject last year. The number of eggs in each instance has been three, which I think may therefore be safely assumed to be the normal number of eggs produced by this species.—*Id.*

Occurrence of the Pied Flycatcher &c. near Rugeley.—In April last a male specimen of the pied flycatcher (*Muscicapa atricapilla*) was shot in Regent's Wood, on Cannoc Chase. This is the first instance of the bird having been taken in Staffordshire that I am aware of. On November the 15th a fine male specimen of the snow bunting (*Emberiza nivalis*), in its winter plumage, was shot on Cannoc Chase, by one of the keepers, near Wednesford. It was a solitary bird, no other birds of any kind being near it: it is very rare here. On the 19th of November a male specimen of the mountain finch or brambling (*Fringilla montifringilla*) was killed by a boy in a lane near the town. The whole of the above were preserved by and are now in the possession of Mr. C. Allen, bird and animal preserver.—R. W. Hawkins; Upper Brook Street, Rugeley.

Occurrence of the Gray-headed Wagtail (Motacilla neglecta) at Eastbourne, Sussex.—On the 5th instant I shot a female specimen of this bird on the beach near Eastbourne. It has not, I believe, been previously noticed in this county.—J. B. Ellman; Lewes, May 7, 1851.

Occurrence of the Parrot Crossbill in Suffolk and Norfolk.—About a month ago I was fortunate enough to obtain from Mr. Head, bird-preserver at Bury St. Edmund's, a specimen, a fine red male, of the parrot crossbill, which was shot at Saxham in this county, last November. As Messrs. Gurney and Fisher do not include this species in their "Account of Birds found in Norfolk," (Zool. iv. 1312), I am glad to be able to say that at Riddlesworth Hall there is one, also a red male, which was shot in the neighbourhood, and in that county, some years since.—Alfred Newton; Elveden Hall, Thetford, April 30, 1851.

Observations on the Cuckoo, (Cuculus canorus).—On the morning of the 14th of April, I was out shooting with a friend, for the purpose of obtaining specimens in Ornithology, and having arrived at a point of the river called the Alder Carr, situated midway between Norwich and Thorpe, I heard from an adjoining tree the well-known note of a cuckoo, which I observed perched at the distance of twenty yards. I was about to fire, when over my head sailed another, with something between its mandibles. My curiosity was excited, and leaving the other to speed on its way, I followed in a boat the flying cuckoo, which I saw alight in an adjoining meadow. I reached the bird within twenty yards, and observed it in the act of progressing, in a similar way to the crawling of a parrot, by the side of a drain, with the substance still in its beak; after traversing some distance it stopped short, and at the same time I fired. Upon nearing it, I found the substance before mentioned to be its egg, I am sorry to say, broken, but still quite satisfactory to me that such was the case. Upon dissec-

tion I found the cloaca contained another egg of nearly the same size, but without the calcareous envelope. I think in all probability this bird was searching for a nest, perhaps that of the meadow pipit (*Anthus pratensis*), for the depositing of its egg.—*J. O. Harper, Curator to the Museum of Anatomy, Hospital, Norwich.*

Waxwings killed in Northumberland.—I have to-day seen a fine flesh specimen of the waxwing (*Bombycilla garrula*), which was shot near the village of Wideopen a day or two ago. Two others were killed at the same time, but the shooter not being aware of their value did not preserve them. — *Thos. J. Bold ; 42, Bigg Market, Newcastle-on-Tyne, April 16, 1851.*

Occurrence of the Waxwing near Bishop Auckland. — I beg to inform you of the arrival again of the Bohemian waxwing in our neighbourhood this year, though in very limited numbers as compared with last year, and at a much later period. I received a specimen on the 18th instant, which had been shot the day before at New Hunwick near Bishop Auckland ; other four having also been obtained near that place. Since then Mr. H. Gornall has received three to preserve : he himself shot one on the 22nd, and saw other three, which fortunately escaped. — *Joseph Duff ; Hunter Hill, near Bishop Auckland, April 26, 1851.*

Late appearance of the Waxwing.—A pair of waxwings, male and female, were (I am informed) killed at Cringleford, near Norwich, on the 20th of April. So late an appearance of these birds would seem to denote that they would probably have nested there, had they not been destroyed, especially as they were both killed by the same shot.—*J. H. Gurney ; Easton, May 3, 1851.*

Nesting of the Wren (Troglodytes vulgaris).—I have observed one or two instances of variation from the usual locality of the nest of this interesting little bird, which are perhaps worth recording. As every one knows from his schoolboy days, little "Kitty" chooses for its nest a bank covered with moss or ivy, an old stump covered with the same convenient plant, or, better than all, the thatched roof of an out-house. Two years ago, however, I was shown the nest of this bird in the hole of a wall. The entrance was perhaps half a foot in diameter, but it narrowed inwardly, and here the nest was formed, having the usual ingeniously contrived opening, into which I could just manage to get a finger. The brood was hatched safely. The same year I was much amused in watching one of my sprightly little friends carrying a mouthful of moss, nearly as large as itself, into the newly finished nest of the house-martin. I did not observe the real owner of the nest disputing possession with the intruder, but as after each load of moss it flew on to a neighbouring gate, and gave out its usual gay shrill note of triumph, I presumed that the swallow had surrendered at discretion. I regret that I was prevented re-visiting the place to ascertain whether this was the fact or not. This year I found that my little friend, or one of them, rather, for I boast of many, had built its nest in the branch of a yew-tree, not in the fork of two branches, but amongst the foliage of a large branch stretching out far from the main stem, and at least eight feet from the ground. I at first doubted the fact of the ownership of the nest being that of the wren, and watched it carefully. There was an egg laid every day up to the fifth ; the sixth day being wet, I did not visit the nest ; on the seventh day I found only a single egg, what had become of the others I do not know. I carefully looked for foot-marks, but found none except my own, and I have perfect confidence that no one about my premises would touch a nest. In addition to this, I hold it impossible for any *human* to get the eggs out of a wren's nest, without destroying the nest or breaking the eggs, and so I suppose a rascally starling was the depredator..

As I wished to be satisfied about the ownership of the nest, I tried hard to get a look at the remaining egg; but so curiously contrived is this tiny thing's habitation, that I did not succeed without breaking it, and at the moment my doubts were satisfied, the owner, as if in reproach, gave me an appealing strain just above my head. One word as to the fact frequently noticed by naturalists, of nests being finished a week or ten days before the eggs are laid. Mr. Jenyns, in his interesting 'Observations,' which I would advise all students of nature to read, suggests that this is owing to some cause interrupting the development of the ova. I feel satisfied that this is true, and that the cause is the sudden occurrence of cold weather after the genial warmth of a perhaps premature spring has called forth the architectural necessity. Such a season is the present; and I have had several opportunities of observing the above fact. — *C. R. Bree; Stowmarket.*

Occurrence of the Hoopoe at Torquay. — A specimen of this bird was shot in Dr. Sutherland's garden, at Torquay, about the middle of April; and another bird, a female (the one procured being the male), was seen about there at the same time. For this information I am indebted to Mr. Burt, of the Torquay Museum.—*Alfred Newton; Magdalene College, Cambridge, May 9, 1851.*

Occurrence of the Hoopoe in the Isle of Wight. — It may interest some of your readers, if a more circumstantial account has not reached you, to learn that two specimens of the hoopoe were shot in this island during the last month.—*George Guyon; Ventnor, Isle of Wight, May 13, 1851.*

Occurrence of the Hoopoe near Weymouth. — On Friday the 19th instant, three specimens of the hoopoe were shot near here, and have been preserved by Mr. Rolls, naturalist, of this place. One specimen was shot in a piece of land called the Park, situate in the town, and nearly surrounded by houses; the second was killed at Radipole, the parish adjoining this town; and the third was shot in the Isle of Portland. One specimen was much smaller than the others, and was moulting; the tail-feathers in this bird were destitute of the white patch. I noticed the swallow on April 13th, with the wind from the North-east; the house-martin and bank-martin on the 15th.—*William Thompson; Weymouth, April 29, 1851.*

Occurrence of the Hoopoe at Yarmouth. — A fine specimen of the hoopoe was shot near Yarmouth on the 25th of April, 1851, and is now in the possession of *J. Green, Naturalist; 1, East Road, City Road.*

Nest of the Kingfisher. — I have inclosed you part of a kingfisher's nest, which I found yesterday near this place. It contained seven eggs, but they were so nearly hatched that it was impossible to extract the young ones. It weighed two ounces and a half, and was full of maggots.—*Walter W. Reeves; Tonbridge Wells, May 9, 1851.*

[This nest consists entirely of small fish-bones, a very usual circumstance, and principally those of roach and dace.—*E. N.*]

On the Hissing of Snakes. — In these days of curious inquiry into everything connected with Natural History, it may be interesting to record some observations on the hissing of snakes. Little is to be learned on the subject from writers on Natural History, who seem to have given it hardly any attention. Like others, I used to suppose these reptiles opened their mouths when they hissed, but on closely observing them, I found the mouth closed. This led me to think that the sound came through the small

opening in the upper lip, assisted by the tongue, so as to form a sort of whistle. The reptile often puts out its tongue when silent, but I am persuaded that when the snake hisses, the tongue contributes to form the sound, which is louder or fainter, according to the temper or rage of the reptile. I have the same to observe concerning the viper, which rather blows than hisses; but not so of our smallest serpent, the slow-worm, which has no opening in the upper lip. I strongly suspect that this harmless reptile is entirely dumb, for though when provoked it puts out its tongue, I never heard it utter a sound.—*John Wighton.*

Proceedings of the Zoological Society.

Evening Meeting, April 8, 1851.—Professor BELL in the chair.

Mr. Gould read a communication upon the genus *Hapalotis*, of which he exhibited several species to the meeting.

Mr. Tomes read a paper, in which he gave an account of a peculiar structure in the teeth of the genus *Tapirus*.

The Secretary read a paper by Dr. Nicholson, upon the habits of a supposed new species of *Agama*, and the probable use of the highly coloured gular pouch, from observations made by himself in India.

Mr. Gray communicated the description of a new species of coral, allied to *Gorgonia*: and the characters of a new genus of bivalves, to which he gave the name of *Vanganella*.

May 1, 1851.—A quorum not being formed, no meeting took place on this day.

Proceedings of the Entomological Society.

May 5th, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the respective donors: — ‘*The Zoologist*’ for May; by the Editor. ‘*On the Probable Relation between Magnetism and the Circulation of the Atmosphere;*’ from the ‘*Appendix to the Washington Astronomical Observations for 1846:*’ Washington, 1851. ‘*Bericht über die Leistungen in der Entomologie während des Jahres 1848, von Dr. H. Schaum;* Berlin, 1850:’ presented by the author. ‘*Entomologische Zeitung*’ for March and April; presented by the Entomological Society of Stettin. ‘*The Athenæum*’ for April; by the Editor.

The President announced a Resolution of the Council, that during the Great Exhibition any foreign entomologist might see the Society’s collection on any day of the week, if accompanied by a member or subscriber.

Mr. S. Stevens exhibited a species of *Curculionidæ*, of which he had not been able to determine the name, but which was new to Britain; also an *Adela cuprella*, the second known British specimen: both captured recently on sallows at Fenny Stratford. He likewise exhibited a living specimen of *Callidium sanguineum*, caught at Bow,

Middlesex, and some splendid Lepidoptera and Coleoptera from Ega on the Amazon, collected by Mr. Bates, who, he mentioned, was now on his way home. He brought for distribution specimens of *Hylastes rhododactylus*, recently taken in stumps of broom at Coomb wood.

Mr. Shepherd exhibited a hermaphrodite *Smerinthus Populi*, found at liberty. In this instance the right side was male.

Mr. Douglas exhibited a longicorn beetle, *Coptomma variegatum*, *Fabr.*, a native of New Zealand, caught flying at Bow Common, by Mr. Robertson, last September. He also exhibited one of the Tipulidæ, apparently a species of *Trichocera*, the pupa of which he found sticking out of the very hard side of the sand-pit at Charlton, the insect being in the act of emerging therefrom. It was difficult to think how so slender a creature had the power to work through such hard material.

Mr. Smith exhibited a specimen of *Formica graminicola*, *Latr.*, taken by Mr. Wing, December 9, 1850; and a specimen of *Formica cunicularia*, taken by Mr. S. Stevens, April 18, 1851. Both insects were females, and were caught flying, the interest attached to them arising from the season at which they were found, the time of appearance of the former being the end of June, and of the latter, the autumn.

The President observed that such observations as these might appear trivial, but they were in reality of much importance, and in the aggregate would serve as clews to the elucidation of many obscure points in the history of insects. For instance, in respect to the economy of ants, we are in some species quite in the dark, certain things observed of some having been attributed to all, quite erroneously, as the habits of species differ greatly.

Mr. Waring exhibited two singular crustaceous-looking spiders from Western Africa.

The President stated that some plants of a strawberry brought by him from Paris, had been all but destroyed by *Haltica ærata*, the young leaves and buds having been eaten in the same manner as those of turnips are devoured by *H. nemorum*.

The following note on *Trichiosoma lucorum*, by R. Maysmor, Esq., in a letter addressed to the President, was read.

"I am still puzzled respecting these cocoons, for those I have found with the insect inclosed, are opened when it escapes in a very different way to the greater number of this kind of cocoon. I have observed the escape of several, and I see they cut a round piece very nearly out at one end, so that it merely hangs by a little hinge; the hole thus made is just large enough for the escape of the insects. In one instance the fly had made a slight mistake, for after having cut the piece completely out, it proved too small, and after several unsuccessful attempts to force itself out, it set to and cut off a slip round the hole, which made it large enough. The flies cut the holes with their mandibles as true as they could be done with a pen-knife, and when ready, they force themselves out head first. I fancy the flies which cut these round holes are all females. I have five cocoons opened in this way, and all the flies are females: the cocoons which are opened in such an irregular manner, I think belong to the male flies: the exuviae are considerably different in the two cocoons. At any rate, the tenants of the irregularly opened cocoons appear to make their exit at least a month earlier than the others, for I found them opened by the middle of March, whereas I have not yet seen any of the others opened on the hedges. My first flies did not come out till the 12th of April, and they had been a month in a warm room. The day after they came out I placed them in a sunny window, and they became very active; I then

put them upon some hawthorn-leaves, and had very soon the pleasure of seeing them begin to oviposit, which they continued four or five hours. They were so intent upon this, that I could turn the leaves about so as to enable me to see the whole operation distinctly with a Coddington lens. The fly having placed herself in a favourable position upon a leaf, so that her abdomen is in contact with it, raises the cuticle of the side upon which she is (for I found with gathered leaves that she made use of either, but generally the upper), by inserting the ovipositor very gradually, but working it rapidly all the time till it was wholly extended, when it was withdrawn a liquid oozed out, which left the cuticle raised like a little blister, of an oval form, and about the tenth of an inch long: the ovipositor is about a quarter of an inch long. The operation lasts about three minutes, during which the fly lowers her antennæ in front, and the segments of the posterior part of the abdomen have a slight tremulous motion. The sight is a most beautiful one, equally as interesting as the ciliary currents of the Rotifera; the cuticle of the leaf is so transparent, that at a little distance the ovipositor absolutely appears to be on the exterior surface. It would seem that although there may be no connexion with the male fly, the desire of propagating their species is equally strong.

"I would not say that the fly which leaves the cocoon by the small irregular opening does so backwards; it appears strange to me that the skin should be left in the hole with the head of it in the cocoon unless it is so: but I hope next year to see the actual escape of this fly. With regard to the cocoon containing larvæ of ichneumon flies, I cannot see what insect made the hole in that cocoon like the others, as it certainly was, if the fly had been destroyed by the parasites, as they did not seem in a state to make it. I inclose one of the cocoons with irregular opening, containing the skin, also one opened by one of my female flies, with the insect and its skin. I hope to find out from some quarter the solution of the difference of these cocoons."

Mr. Smith observed that he had frequently observed this insect emerge from its cocoon, and always with the head first.

A paper 'On the Effects of Temperature, Gases, and Vapours on Insects,' by John Davy, M.D., F.R.S., in a letter to Wm. Spence, Esq., was read, giving a detailed account of various experiments, from which it appeared that no two of the agents employed acted precisely in the same manner. Those agents most fatal to life appear to have been sulphuretted hydrogen, ammonia, chlorine, nitric acid, iodine, camphor, oil of turpentine, each varying in degrees of rapidity of effect, but so far analogous that no perfect revival ensued on exposure to the air, after a motionless state had been induced. Those less fatal to life appear to have been azote, hydrogen, carbonic acid, coal-gas, muriatic-acid vapour, ether, chloroform;—all of them producing immobility, and probably insensibility, with different degrees of rapidity, but not commonly terminating in death, revival in most instances following. Oxygen seems to stand alone in its effects on the functions of life; that death sooner occurred in the trial with it than in that with atmospheric air, may have been owing to exhaustion connected with increased vital action of the insect unsupported by nourishing food.

Mr. Smith read a note 'On the Habits of the Bee, *Lestis bombylans*, and a Correction of its Synonymy,' as follows:—

LESTIS BOMBYLANS.

Apis bombylans, *Fab. Ent. Syst.* ii. 338, 104, ♀.

Centris bombylans, *Fab. Syst. Piez.* 358, 19.

Also a description of a new species under the name of

LESTIS ERATUS, Smith.

"Female, (7 to 8 lines). Brassy green; the pubescence on the face pale yellow; thorax punctured; wings slightly fuscous; pubescence at the apex of the abdomen pale yellow.

"Male, (7 to 8 lines). Brassy; face as in *L. bombylans*, but yellow, patches of pubescence much more dense and bright yellow; wings hyaline, slightly fuscous; all the legs fringed with bright yellow pubescence."

Mr. Smith also read a note 'On the Habits of *Abispa*, a solitary Australian Wasp.'
—*J. W. D.*

Proceedings of the Microscopical Society of London.

April 16, 1851.—*DR. ARTHUR FARRE*, President, in the chair.

Robert Semple Frere, Esq., *Bransby Blake Cooper, Esq.*, and *Wm. R. Morris, Esq.*, were balloted for and duly elected Members of the Society.

Dr. Asa Gray, Professor of Natural History in Harvard University, Cambridge, Massachusetts, was balloted for and duly elected an Honorary Member of the Society.

A paper by *W. Ladd, Esq.*, 'On an Improved Adjustment for a Microscope,' was read. After pointing out the disadvantages of the ordinary rack and pinion movement, Mr. Ladd described the improvement he had made, which consists of the substitution of a steel chain, known as a "fusee chain," for the rack, and a steel pin or axis for the pinion. The ends of the chain are attached to the top and bottom of the sliding bar which supports the body of the microscope, passing two or three times round the steel pin or axis, which is furnished with a milled head. The motion thus produced is exceedingly smooth and even, and is not liable to the disarrangement on account of wear, which forms the greatest objection to the rack and pinion. A microscope fitted up with this movement was afterwards exhibited to the meeting.

A paper by *Messrs. Hassall and Coppin*, being a description of three species of marine Zoophytes, was also read. These are three new species of corallines of the genera *Coppinia*, *Hassall* (*Zool.* 2223), *Sertularia*, and *Campanularia*. They are respectively named *Coppinia mirabilis*, *Sertularia gracilis*, and *Campanularia serpens*, and are found on the English and Irish coasts. Detailed descriptions were given, and drawings exhibited in illustration of the same.

A third paper, being a translation of a letter from *M. Nobert*, giving a description of a glass plate, having on it twelve systems of parallel lines, was read. These systems of lines were distinguished by the letters A, B, and C, to M, the latter being the finest; and the distances in each set were expressed with the utmost exactness in Paris lines, as being, in system A, 0.000375, to system M, which was the finest, 0.0001281. The other systems were of intermediate degrees of fineness. By using this plate in a particular manner, fully described in the paper, the systems of lines from A to G present an aerial spectrum of the prismatic colours, A being deep red and G a deep violet; and as no colour appears in the remaining systems (from H to M), the author considers that the distance of the lines in these systems is nearer than the length

of the smallest (the violet) undulations of light. Upon turning the plate, and arranging it in a rather different manner, coloured representations of the whole of the twelve systems are produced, not, as in the former instance, in the air, but in the glass; and upon comparing these with the aerial spectrum, it is found that the colour of the system F, being deep red, agrees with that of A in the aerial spectrum, G with B, and in like manner the following systems, H, I, K, L, M, with those of the former, C, D, E, F, G; and by uniting the numerical values for the distances of the lines harmonizing in their colours, the main result is that the length of the undulations in the glass is in proportion to that of those in the air, as 1 to 1.53, furnishing a direct confirmation of the undulatory theory. The correctness of these results was also stated to depend on the absolute accuracy of the distances of the lines, as an error of only $\frac{1}{200000}$ of a Paris line was found to produce stripes of other colours, and if the distance of the lines in system M (that which produces the violet rays in the glass spectrum) is diminished by only $\frac{1}{50}$ of that amount, the colour will entirely disappear.—J. W.

Proceedings of the British Entomological Society.

The May meeting of this Society was held at the Society's rooms, 10, Fountain-place, City-road, on the 5th instant; Mr. Harding, President, in the chair.

The following insects were exhibited, all of them captured during the present year.

Notodonta carmelita, a fine specimen, taken at Shirley, Surrey.

Celæna agathina, taken at Darenth, on willow blossoms. This is a new locality for this insect.

Spilonota pauperana, several specimens.

Grapholitha Paykulliana.

Eupæcilia abbreviata, on willow blossoms.

Semioscopis Avellanella.

Tæniocampa gracilis, and many others.

Mr. Norman read the following account of the habits of a species of spider, from Dickens's 'Household Words' of April 5.

"It was to record an instance of insect talent and ingenuity, which it was my good fortune to observe in the gorgeous forests of British Guiana, that I took up my pen; before doing so, however, let me offer a few brief remarks on other members of the same family, which are natives of Guiana. In applying the term 'insects' to spiders, I adopt the classification of the older entomologists; for the moderns have, with a considerable show of reason, placed them beyond the pale of the true *Insecta*. We ever find the various forms of animal life most numerous, where their peculiar food is in the greatest abundance; and it is to this cause we must assign the comparatively small number of spiders which inhabit South America; for the *Diptera*, or two-winged flies, which furnish their principal supply of food, are in no country so limited in number: and this is the more surprising, as nowhere are the other classes of insects so plentiful. It is probable, however, that but a very small portion of the spider family have as yet been discovered, from the fact that great numbers infest the topmost branches of the trees in the forests of the interior, where they escape the eye of the few collectors who have penetrated to their haunts, and are only thought to be found on inspection of the crops of various insect-feeding birds. This supposition becomes greatly confirmed, when we remember the many previously unknown species which

have lately been detected in our own well-explored country. Those which are known belong, principally, to that division of the family whose members are designated 'hunting spiders,' from their not weaving webs to entrap their prey, like the majority of their brethren in this country, but securing it by lying in wait and pouncing upon it when unawares, after the fashion of the feline tribe among quadrupeds. Many of the smaller species of this division frequent houses in Demerara, affording excellent opportunities to the inquirer of observing their tact and sagacity.

"Many a time have I sat, for hours, watching them thus engaged on the floor, the *jalousie*, or the wall, their compact forms scarcely distinguishable, when motionless, from the head of a nail or a knot in the wood. A fly alights a yard or so from some lurking robber impatient of a meal: see how quickly he detects it, whether behind or before it matters little, for he can see in all directions equally well: with what eagerness, yet what caution, he advances towards his unconscious victim; now he takes a few stealthy paces, now he remains still; at length he has reduced his former distance to about a third. He is now within the range of the fly's vision, and an incautious movement would balk him of his prey. Every faculty is alert—the fly advances, so does he—it moves to one side, so does he—it retreats, so does he—one spirit seems to animate the two bodies, they move in perfect unison; backwards, forwards, or sideways, the spider walks with equal facility, and even keeping his side towards the fly, glides as truly and silently as its own shadow. The fly has now become stationary; perhaps he is absorbed in the discussion of some stray grain of sugar, or, may be, clearing his head and face from all particles of dust; for flies are, in this respect, very particular, indeed perfect models of cleanliness, though I dare say Mary, the housemaid, thinks far otherwise, as she arrays the picture-frames and chandelier in the drawing-room in their muslin coverings; or Martha, the cook, as she surveys her rows of copper skillets and saucepans, brightened the day before by hours of scouring, and now bespeckled by a buzzing plague: may be, with microscopic eye he is surveying some furious combat at his feet, and thinking, with mingled feelings of derision and contempt, that his mighty foot would cover the battle-field of thousands. Well had it been for the poor fellow if 'be vigilant' had been written in fly-characters below his nose. Meanwhile, the spider is advancing nearer and nearer; you cannot see him move, so guarded are his motions, but can perceive that the interval which separates him from his victim is gradually decreasing; he is now but a few inches distant, perhaps four or five—he prepares to leap; the fly is chuckling at some atomic Hector, dragged by the heels from the field of slaughter by a valiant Achilles—he'll smile no more—one spring, one pounce, and he is clasped to a breast that knows neither pity nor remorse.

"These spiders are well-limbed for leaping, and jump an enormous distance, considering their size; to equal them, in fact, a full-grown tiger would require to spring above fifty yards at one bound, or a kangaroo, probably the best jumper among quadrupeds, to increase five-fold its huge hops of twenty feet. Some of the hunting spiders conceal themselves among the leaves and in the crannies of the bark of trees; others, again, with deeper craft, lurk among the petals and in the calyxes of flowers, where it is probable that many, coloured by nature for the purpose, deceive their prey by assuming the appearance of pistils and stamens. Mining spiders, of the genus *Mygale* of naturalists, bore circular holes in the ground, some two or even three feet in depth, lining them with a thick silken cloth, and securing themselves and young from detection and intrusion by closing the entrance with an ingenious trap-door, formed of particles of earth, and not recognizable, when closed, from the surrounding soil.

Another small web-weaving species of the same genus, which Swainson observed in Brazil, constructs a case of earth and silk, with a spring-binged lid, which it hangs in the centre of its web, and to which it retreats on the approach of danger. But of all the spiders which either hunt their prey on the ground, or in the branches of trees, or among the leaves of flowers, or dig holes in the ground, or weave delicate webs, not one exceeds, in the singularity of its habits, the interesting individual to which I have already alluded. It was about the noon of a day spent among the Aritaka Rapids, that, on landing on one of the many small islands with which the stream is thickly studded, I detected this curious species pursuing his avocations. Leaving my companions cooling themselves beneath the shade, I had crossed over to the opposite shore, which I found shelving and rocky, and completely overrun by a vigorous growth of succulent plants. A *Bignonia*, with clusters of snow-white flowers, with large stamens of the brightest crimson, diffusing around a most pleasing odour, had scaled the branches of a tree hanging over the water, and mingled its leaves with those of a delicate parasite, which had, in turn, twisted round its crooked stem, and whose small, crumpled seeds—partially covered by a protecting envelope—were swinging by hundreds in the breeze, at the end of long, thread-like foot-stalks. The seeds were sticky with a fragrant and sweet-tasted gum, and seemed to be much frequented by the scores of flies that were buzzing around. From a meal on those latter I thought I had disturbed the birds, which flew away on my arrival; but may be, as we shall presently see, I was mistaken. Wishing to examine them more closely, I was on the point of plucking a few of the seeds, when my hand was arrested at the sight of one of them, suddenly endowed with a strange sort of activity—a pretty fly, intent on nectareous sippings, had scarcely alighted, when he was tightly clutched by no friendly embrace; and the seed, no longer a torpid vegetable, but full of life and vigour, and squeezing poor Master Fly in two or three pairs of sturdy arms, swung in the air below its former position by three or four inches of silken line. The struggle was a short one, for the bright red seed, or, rather, spider—a strong-limbed, thickset, plump-bodied rascal he was—soon quieted his victim, and then withdrew to his roost to regale himself on the juicy carcase so well earned by his ingenuity.

“I proceed to explain by what means he was enabled to maintain his assumed character; not the less difficult because he has only to ‘look it’ to ensure success—as we know by many other actors, both on the stage and off. Our spider, courteous reader, understands the value of appearance as well as you or I: he knows how the dashing cab brings patients; how the shop well stocked with ‘dummies,’ and the rattling parcels’ van, bring customers; how the ‘enormous demand,’ and the ‘cured a duke,’ win more victims; and how a knowing look and wise shake of the head may make a fool seem a learned man. Yes, he knows all this, or, at any rate, he knows what amounts to the same thing—that appearances have *very* powerful effects all over the world; for our spider is a wide-awake cove, and no sleepy-head, though he may seem so for two or three hours at a stretch; nor a turnip-head either, though the greater part of his time he may look like a vegetable. Let us charitably hope that he has never wanted a meal by lacking a respectable appearance, like too many, I doubt, in more sophisticated communities.

“As I have already stated, the seed seemed crumpled in one part; and this was caused by a large and uneven black lump at the bottom; though I am not sufficiently a botanist to give its technical appellation, its nature will be understood when I say that it corresponds with the black crown on the berries of the hawthorn: a ridge that

seemed composed of many longitudinal ribs and folds extended from this to the margin of the protecting cover. Now the spider, formed by nature for the express purpose—imitated this peculiar conformation of the seed, by coiling up its small black head and body on its plump, disproportionately large, red abdomen, and laying its stout black limbs close together to form the ridge. The umbrella-like leaflet, which partially enveloped the seed, performed the same kind office for the spider, and completed the disguise, which, if the reader should think clumsy and ill-fitting, I beg him to attribute to the uncouthness of my description, and not to any want of talent in this incomparable actor. The flies were evidently aware of the presence of their enemies, and also seemed to know, probably by their wanting the fragrant and attractive gum, which they were—for while the legitimate seed had each one or more tenants, the pretenders, who held a proportion to the others of fully one to four, had only chance and unfrequent callers.

“A difficulty here naturally arises:—what led the flies, if they knew the real from the feigned seeds, to wittingly seek their destruction? Its attempted solution involves probably the most singular fact connected with the subject. A happy tippler, after swilling the nectar for some time, would carelessly buzz away to the first bright object near him, unable to perceive, or entirely regardless of danger. Can it be that the honied liquid has proved too strong for his weak head, and he fails to see clearly after deep potations?—or does his sense of smell, which alone enables him to discriminate friend from foe, become cloyed and deadened by his odorous draughts, and he falls a victim whilst trusting to his eyes, which merely trace the resemblance? Little does it matter what are the precise circumstances; it is sufficient that the spider is provided with food, while it affords an instance of that nice adaptation of the means to the end, and of that wondrous instinct and sagacity, which is often so profusely displayed by nature in these and other insect tribes, and not more strikingly in the more remote, as in those that are most familiar to us. Yet how few are aware that an insect which inhabits our houses, taking up its quarters in our bed-chambers—nay, even in our beds, and preying on a species of vermin—with which we are most of us acquainted, as in some localities few houses are free from them—is, in its own way, as talented an actor as the subject of our sketch. I allude to the larva of the bug-bear (*Reduvius personatus*), which deceives its prey by assuming the appearance of those aggregations of flax and dust which strew the floors beneath our beds, succeeding in this character by arraying itself in a mantle of down and tiny shreds. In the seed-covers now occupied by the spider, I often found a pale yellow silken purse—well stored with young: of this it was almost impossible to dispossess the mother; for, with true maternal affection, sooner than part with it, she would suffer herself to be torn limb from limb. It may be asked, how, in the first place, the spiders managed to detach the seeds, whose position they occupied? The most natural reply is, that they merely take possession after the birds have devoured them; for it is probable that these are their proper food, and not the insects, as I had at first conjectured. May be the birds come to feed on the spiders, and tear the seeds from their delicate foot-stalks, in the endeavour to find their prey, in whose appearance they may be as often deceived as the flies themselves; it must be confessed, however, that this latter conjecture is neither so simple nor so plausible as the former.

“The complicated relations of plant, bird, and insect, form one of those beautiful harmonies between the different kingdoms of Nature, which the amiable St. Pierre so delighted to depict. The plant affords to the bird its daily bread, with protection and

shade from the sun, and, it may be, materials for a nest; as I have seen in other parts of the forest, chiefly pendant from branches on the banks of rivers and creeks, a small pouch-like structure, artistically woven with delicate threads, similar to the footstalks of the seeds; the bird, in return, aids the propagation of the plant, by dropping its seeds on the boughs of various trees and shrubs, thus enabling it to obey that primary mandate of the Creator, 'Increase and multiply!' By multiplying the numbers of the plants, it increases the quantity of food available for itself, its offspring, and its kindred—an exemplification of another of the wise ordinances of Nature, which makes the good and natural action (and an action is only good in so far as it is natural) bring its own reward, and the bad and unnatural one its own punishment.

"The spider is indebted to the plant for the means—and to the bird for the opportunity of catching its prey; the plant supplies food to the fly, and it in turn forms the nourishment of the spider. How many are the ramifications of this harmony which we understand!—how many more kind offices may the members of one kingdom perform for those of the other, which are beyond the range of our knowledge! But I have reached my assigned limits, and must reserve other notes on this interesting family of insects to another opportunity."—*I. Norman.*

Tyneside Naturalists' Field Club.

March 21, 1851.—DENNIS EMBLETON, M.D., President, in the chair.

Ralph Carr, Esq., of Dunston Hill, read the continuation of his paper 'On Composite Names of Places of Anglo-Saxon Derivation.'

Mr. Storey read an abstract of his paper 'On the Flowering Plants and Ferns found within five miles of Newcastle-upon-Tyne.'

Mr. Albany Hancock presented a short paper, intituled a 'Notice of the Occurrence of *Diphyllidia lineata* on the Durham Coast.'

A collection of Algæ and corallines was sent for inspection by Miss Errington.

Dr. Embleton and Mr. D. Oliver, jun., exhibited numerous well-dried specimens of ferns and other plants.

On the following day the Anniversary Meeting was held in one of the rooms of the Government School of Design, when the President, Dr. Embleton, delivered an able and highly interesting address; after which, Mr. Carr read the concluding portion of his paper 'On the Composite Names of Places.'

The following gentlemen were elected office-bearers for the ensuing year:—President; Robert Ingham, Esq., Westoe. Vice-Presidents; Dennis Embleton, M.D., Rev. J. F. Bigge, and Mr. William Kell. Treasurer; Mr. Thomas Burnet. Secretary; Mr. John Storey. Committee; Rev. G. Cooper Abbes, Mr. Albany Hancock, Mr. John Hancock, Mr. Joshua Alder, Mr. J. T. Bold, Mr. George Tate, F.G.S., Mr. John Thompson, Mr. R. Y. Green, Mr. D. Oliver, jun., Mr. Robert Currie, Mr. Edward Mather, and Mr. Thomas Jefferson.

The following gentlemen were elected Members of the Club:—George Robinson, M.D., Capt. Moody, R.E., Mr. J. B. Falconar, jun., Mr. E. B. Richardson, Mr. G. A. Hutton, and Mr. F. J. Peck, Newcastle; Mr. James Forster, Gateshead; Mr. Stephens, North Shields; Rev. Cuthbert J. Carr, Witton Gilbert; and Rev. Joseph Depledge, Chester-le-Street.

The days and places of meeting were fixed as under : —

Bywell and Riding Mill,—Friday, May 30.

Durham and Finchale,—Friday, June 20.

Allenheads,—July.

Staward Peel,—Wednesday, August 20.

Roker and Whitburn,—Friday, September 12.

Corbridge and Stagshaw,—Friday, October 3.—*J. S.*

Occurrence of the Sturgeon in the Mersey.—A fine female sturgeon, measuring 7 feet 3 inches in length, and 2 feet 9 inches in girth, was captured in the river Mersey, about two and a half miles below Warrington, on the 29th of last month. It is to be placed in the town Museum, and has been beautifully preserved for that purpose by Mr. J. Cooper, the Curator. She contained nearly a stable-bucketful of spawn, the roe being about the size of No. 4 shot.—*W. Fell; Warrington, Fifth Mo. 8, 1851.*

Occurrence of the Smooth Dab (Platessa microcephalus) at Gamrie.—A very fine example of this rather uncommon fish was caught off the fishing-station of Gardenston, in this parish, about a fortnight ago. It measured in length 22 inches, and in its greatest breadth 13 inches, a size, I am given to understand, which it seldom attains. The fishermemen here say they never met with a specimen of the same fish before; but as they were evidently disposed to pass it as a *sole*, until their attention was pointed to the difference, their judgment in the case is not much to be relied on. It is however here, no doubt, as elsewhere on the Scottish coast, of not very frequent occurrence.—*George Harris; Gamrie, N. B., May 23, 1851.*

Note on the Lump Fish or Sucker, (Cyclopterus Lumpus, Linn.)—Dr. Parnell, after observing that this fish is more abundant on the west than on the east coast, adds that they “seek the sandy ground to deposit their spawn,” (Fishes of the Forth, 382). Upon this coast their *nests* are almost invariably to be met with in rocky places, a little beyond low-water mark. There is also this peculiarity, that the sites of these are usually cavities, from eight to ten inches in diameter, opening horizontally into the water. Mr. West, of Pennan (Zool. 2998) informs me, that in one case he came upon a *hen* seated on her nest, just, he supposed, as she had completed the process of spawning. She adhered very tenaciously, manifesting at the same time considerable intrepidity, which seemed to be shared by her companion the *cock*, who, during the struggle, kept close by, flitting through and through the water in a state of violent agitation. The quantity of spawn contained in a nest is very considerable. A mass was lately taken from a cavity which filled a capacity of seven pints imperial measure. It is known that the lump is a favourite morsel with the seal; but I have nowhere seen it stated that previously to being disposed of for assimilation, the intended viand is carefully divested of its somewhat repulsive looking covering, an operation which the seal accomplishes with considerable dexterity and neatness. This covering is frequently floated in, and deposited on the shore by the tide, and, as usually seen, with the head and tail attached to it: sometimes, however, the head is wanting. Judging from a variety of specimens, the operation is commenced on the shoulder, and carried downwards to the tail, which is regularly chopped off and dismissed with the skin. On my attention being first called to the above fact, I thought it possible that the cast-off skin might be accounted for on the assumption that the seal effected his repast by excavat-

ing the flesh out of the skin ; but all the fishermen I have spoken with on the subject decidedly affirm that he flays, or, as one of them quaintly expressed it, "He peels them like a potato."—*Id.*

Note on the Lord Fish.—In Mr. Yarrell's work on the 'British Fishes,' under the head of the common cod, there is described and figured what appears to be a deformed variety of the cod, which Mr. Yarrell obtained from the mouth of the Thames, where it was called by the fishermen a "Lord-fish." A few days since, a fisherman at this place brought me a codling, about fifteen and a half inches in length, and of a deformed appearance, and which he called a "Lord." On comparing this specimen with Mr. Yarrell's figure of the Lord-fish, I found it to agree exactly ; but on reference to the description, I found a difference in the number of the fin-rays, those in my specimen being D. 11, 15, 16: P. 19: V. 7: A. 17, 16: C. 34. The name of "Lord" applied to these fish is probably derived from the notion (which I have no doubt is a correct one) of their being deformed examples of the common cod, the same term being often vulgarly applied to a hump-backed person, and the appearance of the fish suggesting the idea of an individual so afflicted.—*J. H. Gurney ; Lowestoft, May 23, 1851.*

List of Crustacea taken at Weymouth, on the Dorset Coast, from March, 1850, to March, 1851.

Stenorhynchus Phalangium	Portunus arcuatus	Porcellana longicornis
„ tenuirostris	„ depurator	Galathea squamifera
Iuachus Dorsettensis	„ pusillus	„ strigosa
„ Dorynchus	Pinnotheres pisum	Palinurus vulgaris
Pisa tetraodon	Gonoplax angulata	Gebia deltura
Hyas araneus	Ebalia Pennantii	Axius Stirynchus
„ coarctatus	„ Bryerii	Homarus vulgaris
Maia squinado	Atelecychus heterodon	Crangon vulgaris
Eurynome aspera	Corystes Cassivelaunus	„ fasciatus
Cancer pagurus	Pagurus Bernhardus	„ trispinosus
Pilumnus hirtellus	„ Prideauxii	Athanas rubescens
Carcinus mænas	„ cuanensis	Hippolyte varians
Portumnus variegatus	„ lævis	„ Cranchii
Portunus puber	Porcellana platycheles	

—*William Thompson, Weymouth.*

Occurrence of Notodonta trepida in Radnorshire.—I had the other day the pleasure of breeding a beautiful female specimen of *Notodonta trepida*, from a chrysalis found under oak by my brother in Radnorshire. A male specimen of *N. Dodonea*, from the same locality, emerged about the same time, but unfortunately injured itself so much before it was found, as to be utterly useless.—*H. Harper Crewe ; Breadsall Rectory, Derbyshire, May 3, 1851.*

Descriptions of Larvæ of Sphingidæ, with Occasional Notes on some of the Rarer European Species.—*Deilephila Alecto* and *cretica* are becoming very scarce on the con-

inent. In Switzerland they are seldom to be met with in the finest collections, or, if found, the specimens are very old. According to my friend Mr. Anderregg, an indefatigable Swiss entomologist residing in the canton of Valais, and no doubt well known among our numerous British entomologists, the former insect is becoming extremely scarce, and difficult to obtain. *D. Celerio* I have frequently captured in the imago state, but never had an opportunity of describing the larva, which is something similar to that of *D. Elpenor*, and feeds exclusively on the vine. Although I am perfectly acquainted with the differences between these two larvæ, I do not feel justified in adding its description, not having made it myself. It is reckoned scarce in most countries. A few years ago *D. Celerio* was rather plentiful in the neighbourhood of Lausanne in the imago state; I captured several specimens in my garden, flying around the flowers of the marvel of Peru, nasturtium (*Tropæolum majus* and *minus*), and jasmine, during twilight only. *D. Nerii*, no doubt this insect, is no native of Switzerland, but is brought into the country by the oleanders from Italy. A beautiful larva of this handsome *Deilephila* was brought to me from the Campagne Villamont, at Lausanne, on the 27th of October, 1844: it fed upon the *Nerium Oleander*. The description of the larva is as follows:—Caterpillar elongated, and attenuated anteriorly; the three anterior segments being contractile, as in *D. Elpenor* and *Celerio*. Head small and globular: anal horn small, short and thick, bent backwards, of a pale carrot-colour: two large round ocelli, bright blue, paler towards the centre, bordered by black, and then surrounded by green, on the third segment: the ground colour is a pale glaucous green inclining to dull yellow on the anterior and posterior segments; a broad lateral line of white, rather ill defined, and marked with round white spots, bordered by dull green, extends on either side from the fifth segment to the horn; the anterior edge of these segments is also marked with several similar spots: head and thoracic legs pale green; membranous legs pale grayish green, tipped with brown: stigmata narrow, black, bordered by white: abdomen dull greenish yellow or grayish green. The next larva I shall describe is that of *D. Elpenor*. This is certainly the commonest of this genus, and is very abundant around Lausanne, and throughout the whole of Switzerland. The caterpillar is smooth, elongated, and attenuated anteriorly. Ground colour shining black, more or less spotted with pale yellow: a red or yellow dorsal line, dilating into a triangle on the first segment: a broad red or yellow sometimes interrupted lateral line over the legs: two series of large oval patches of shining light yellow on either side, four on each segment, of which the upper ones are the largest and brightest, and the most rounded; the part on which these spots are placed is of a deep velvety black; there is also on either side a series of triangular patches of red, yellowish brown, or yellow: abdomen light orange, buff, yellow or green, with a macular gray or black ventral line: all the legs brownish orange, carrot-colour or yellow: head the same colour as the legs, with the mandibles and lower portion black, the anterior edge of the upper lip yellow, and the palpi yellow tipped with gray: horn varying according to the colour of the head, legs, &c., but tipped with black: stigmata white bordered with black. There are many varieties of this larva, which differ from the general description as follows. Var. 1.—No triangular patches of yellow or brown along the sides: abdomen black, or black with an interrupted ventral line of carrot-colour. Var. 2.—The two lateral series of oval shining yellow patches are joined, forming a series of large oblong patches; it is spotted with much larger spots than the common one; in the place of the lateral series of buff triangular patches, there is a broad and continued ferruginous longitudinal line, which is sometimes marked at the incisions by a

small patch of red. Var. 3.—No triangular patches of yellow or brown &c. along the sides, not so thickly spotted with yellow as the others: dorsal line very slender, and in some individuals entirely missing, its place being left in black: the oval lateral yellow patches are often tinged with pink, especially the lower ones, which are sometimes quite pink: the head generally retains the two black patches, which the others only have when young: the abdomen and prolegs are generally quite black, and the thoracic legs are generally tipped with black, and often entirely of that colour. This handsome larva grows to nearly three inches in length, and is found from the middle of June to the end of October, and invariably on *Euphorbia Cyparissias*, or Cypress spurge, which grows on dry banks. I have found as many as 150 or 200 larvæ in one spot, often fewer, but *never* solitary. They gnaw the lower leaves of this spurge from their apex to their base, and eat very rapidly. It is extremely common in Switzerland; the little children of that country all know the larva by the name of *Chenille de Tithymale*, and have often brought me their caps and hats full of them. The next *Deilephila* that comes in order in the 'Index Methodicus' of Dr. Boisduval, is *D. Esulæ*. This, according to Mr. Anderregg, is the scarcest of all the European *Deilephila*. *D. Galii* I have once seen in the larva state; it was found on the common vine, on which it fed, as well as on *Galium verum* and *Mollugo*. It is seldom met with in the canton of Vaud; I met with it in the neighbourhood of Lausanne. The following is its description. Caterpillar smooth, elongated, attenuated anteriorly, of a fine olive-green colour, more or less speckled with yellowish green; an interrupted dorsal line of dull pink, and on either side one of bright green, meeting the dorsal one at the head; the lower half of the body and abdomen pale yellowish green; a series of large pyriform patches of a yellow colour, bordered by black, with a brown-red spot in the middle of each, these spots lie on the dorsal lines which meet on either side of the horn; those on the middle segments are the brightest and largest; a lateral line of yellow, having on the segments a pinkish red speck, on which are the stigmata; a pale yellow ventral line: legs yellowish; thoracic legs tipped with dark brown: head slate-colour, with the mandibles black: labrum green: palpi yellow tipped with brown: escutcheon fine green, with a slate-coloured semi-oval patch on it: anus with a slate-coloured patch above: horn brown, tipped and granulated with black: stigmata light orange bordered with black. I have also had much pleasure in rearing the larvæ of *D. lineata* in the canton of Vaud, at Lausanne, where it is reckoned a great rarity. It was found on the 19th of June, 1846, in a vineyard near Clermont, on *Les Mousquines* (Lausanne), and fed on *Galium Mollugo*. The caterpillar is smooth, elongated anteriorly; ground colour apple-green, more or less speckled with yellowish; an olive-coloured dorsal-line, dilated into a triangle on the first segment; lower half of the body and all the abdomen of a yellowish uniform olive colour; a series of large oval patches of shining light yellow on either side of the dorsal line, two on each segment, of which those of the middle segments are the largest, brightest and most round; each of these patches is circled with black; a brownish interrupted lateral line, on which are placed the stigmata: abdomen yellowish olive, with a darker ventral line: all the legs are of the same colour as the abdomen; the thoracic legs tipped with shining brown: head greenish olive, with a triangular brownish patch over the mandibles; mandibles and lower part of the head black: horn of a yellowish green colour granulated and tipped with black: stigmata pale orange surrounded by black: a pale lateral line between the dorsal and lower lateral line.—*H. L. de la Chaumette; Church St., Stoke Newington, May 21, 1851.*

Occurrence of Lobophora polycommaria near Keswick.—In the month of April, I was agreeably surprised at meeting with *Lobophora polycommaria* in plenty, during my rambles through the woods bordering on the sunny banks of our lake. This insect I believe has been rarely met with by collectors. I had taken a few in the same locality in preceding years, and on their appearance this season devoted more of my time and attention to their capture than in former years; success rewarded my pursuits, for in about a fortnight, in company with my brother-collector, Mr. William Gleenip, of this place, we found we had taken an unusual number. The mode of capture was by means of a lantern; the time between the hours of 8 and 12, P.M. We also met with them during the day, when leisure permitted us to look for them. They were found chiefly on the trunks of trees, free from moss or cobwebs, and when found upon bushes seemed carefully to avoid the leaves. I find they are not often met with on the wing; the only time I have seen them flying is about an hour after sunset. I am convinced that if when they are met with they were well looked after, we should no longer have to reckon them among the rare (however local) *Lepidoptera* of our island. I should feel pleasure in sending, as far as my duplicates will go, to any collector who may not have met with the insect.—*John Harrison, jun.; near the George Hotel, Keswick, Cumberland, May 19, 1851.*

Generic Names in the Museum Catalogue.—The employment of harsh terms neither disproves nor confirms facts; and to make extracts from an author,—irrespective of the context,—for the purpose of illustrating a theory, is, to use the mildest expression, very unfair. The perusal of the article on the Museum Catalogue of *Lepidoptera*, (*Zool.* 3098), compels me, most painfully, to make the above reflection upon the extracts there given from M. Guenée's letters; and I feel called upon to add a few remarks in vindication of the propriety of inserting the objected references to the "detestable" and "senseless" 'Verzeichniss' of Hübner. Before I proceed, however, I would ask, as doubtless many of your readers would like to know, at what period a work becomes "out of date"? In my folly I had assumed, on a question of nomenclature, that the *oldest name* took precedence; I have now, alas! to learn, after more than forty years' experience, *that* has nothing to do with the question, as the work in which it is proposed may become "*out of date*"!!!* The edition of Linnaeus in which the amended system of nomenclature was first introduced, appeared in 1758; the Vienna Catalogue (W. V.), a mere Catalogue,—with a few almost unintelligible appellate descriptions interspersed, and allied species occasionally placed widely apart,—in 1775; and yet these are not considered "out of date," while we are authoritatively told by M. Guenée, that Hübner's 'Verzeichniss,' of 1816, is so!! The real secret is, that notwithstanding the defective classification of its contents, Hübner has pointed out some admitted genera, and applied names thereto, which have been subsequently detected and named by his successors,—in pure ignorance, doubtless, of his labours,—and which it is not convenient now to adopt. That I consider his arrangement defective, a glance at almost any page of my recent Catalogue will prove: but it must be admitted *that* is no reason why the good should not be employed and the bad rejected, as I have endeavoured to do; not by following the 'Verzeichniss,' but by examining the

* I presume this to be the reason why the French *Lepidopterists* almost universally omit references to Haworth (1803—10), and Leach (1815), their works being "out of date."

insects themselves, years before I had become aware of its existence; from that examination, disposing them into genera, to many of which I applied names, and subsequently, where needful, substituting Hübner's for my own:—in fact I have an old MSS. Catalogue in my library, written by myself in 1812, in which some of the genera are indicated; and consequently *anterior* to the publication of the "out-of-date" work of 1816. If a work is to be shelved and reviled merely because occasionally allied species are separated and discordant ones united, I would call attention to two genera only, out of many, as they stand in my friend Mr. Doubleday's Catalogue, viz., *Nona-gria* and *Chersotis*; and ask by what possible characters (excepting colour) their contents can be held together? In the former, we have one species (*Ulvæ*) placed by Haworth in *Tortrix*, another (*flammea*) figured by Curtis as a *Tinea*, a third (*rufa*) separated by Haworth from the *Noctuæ*, and *Phragmitidis* and *Typhæ* "as wide as the poles asunder"!! All, however, are more or less ochreous or pale, and the *Chersotes* are resplendent with purplish or rosy hues—the *sole* character they possess in common. (*N. typica* and *N. Maura* form the genus *Mania*!! in Guenée's List, an apt name for such madness. Again, all the German writers to the year 1840—Eversmann in 1844—agree in placing *Rhyparia melanaria* in the same genus with *Abraxas Grossulariata*. All this is very bad: these writers are, however, considered authorities notwithstanding). As M. Guenée places my 'Illustrations' in the same category as the "detestable" 'Verzeichniss,' taking for example my genus *Margaritia* in confirmation of his views; I denounce it, as before alluded to, as an "unfair" proceeding. I state in p. 47, vol. iv. of my 'Haustellata,' "This genus as here regarded is evidently a very artificial one, and doubtless requires considerable curtailment, as well as a remodelling of its contents." I then proceed to subdivide the thirty-two species there included, placing the five species he refers to in as many separate, primary, *characterized* sections; viz., *diversalis* in § A., *cinctalis* in § D. b., *ferrugalis* in § F. b., *punctalis* in § H., and *prunalis* in § N. (The Museum Catalogue shows that I have now placed them in different genera). The remaining portion of the first extract from Guenée is one of opinion as to the extent of genera, and a point, moreover, that *he* will not very easily settle. As regards the barbarous names referred to, it is very unfortunate that Hübner has chosen them, but mere barbarism is no just ground for rejecting them:—a Scandinavian may consider them euphonious: at all events, *I* have not adopted the generic name *Bomolocha*, as erroneously alluded to; and that for the reason *I* have not adopted "the whole of the names in the 'Verzeichniss'"; i. e., because I do not admit that and many other of his groups stated by me (*Haust.* iv. 4) "to be very artificial." Again, had Guenée taken the trouble to read the official Introduction to the Catalogue, he would have found that one object was "to ascertain (not adopt) every name which has been applied to the respective species and their varieties." How then could I have ignored Hübner's work without incurring the censure of neglect, and of wilfully misleading my readers,—more especially as I had noticed the book, and in part acted upon its contents, so far back as 1834? I fear the expression, "defunct as soon as it came to light," is another instance of Guenée's limited knowledge of entomological literature, and, coupled with previous remarks, of his anachronisms. In the Introduction (in the *Annales*) to his new classification of the *Microlepidoptera*, he talks of my Catalogue (of 1829) not remedying the defects of Treitschke's arrangement (of 1830-33), or of Duponchel's (of 1834-38), and coolly tells his readers (*Ann. Soc. Ent. de France*, 2nd ser. iii. 115, pub. 1845), that I had not characterized any of these insects!!! My fourth volume, published *only ten years previously*, is a sufficient reply. It may be observed,

too, that in the above paper, there is only one reference to Haworth's Lep. Brit. although many species are therein well described for the first time; and that the genera proposed by Curtis and myself in our respective Catalogues &c., are taken as it were by chance, sometimes he and sometimes I being considered as the author: * and, moreover, in this said paper, intended to reconcile this "Babel Microlépidoptérologie," and to give the *correct* nomenclature, divers names are changed in order to correspond with the ridiculously absurd mononymic system, introduced by the French, in defiance of the otherwise universally adopted rules of zoological nomenclature, and thus creating instead of abolishing confusion. That I have occasionally infringed these rules is undeniable, more particularly among the Pyralidæ, as pointed out by my friend Doubleday. In my 'Systematic Catalogue,' ii. 164, published in 1829, it will be observed that *P. forficalis* is separated as an unnamed genus, and that other species are similarly treated. About four years subsequently to the appearance of that work, while engaged upon the family in question, I first heard of the 'Verzeichniss,' which was kindly lent to me for two days only, when I contrived with great exertion to extract a list of the indigenous species therefrom: finding that many of my indicated genera were named in that book, I adopted them in my 'Illustrations,' and in cases where Hübner's *coitus* (or genera) were much broken up, employed his names, in accordance with the then recognized practice, for the detached species, in order to obviate the necessity of coining new ones, and thus arose the reference to *Mesographe*, and having structurally characterized that genus in vol. iv. p. 45 of my 'Haustellata,' I retained it in the 'Museum Catalogue,' not "to give any idea of the original group," but as the only species cannot consistently be associated with the other discordant ones mixed up in the genus *Pionea* as catalogued by Duponchel; the only authority we possess for the employment of that name, beyond its adoption (subsequently) in Doubleday's List. Having thus cursorily replied to the animadversions on the Catalogue, I, for ever, quit the subject, and only regret that the pages of the 'Zoologist' should have been occupied with its discussion, to the exclusion of more important matter.—*J. F. Stephens; Eltham Cottage, Foxley Road, Kennington, May 15, 1851.*

New British Tenthredo.—I have frequently remarked upon the undue stress laid by entomologists on their captures of novelties; as an illustration, I will just mention what some persons may consider a singular fact. You, Mr. Editor, requested me to bring something new to the recent meeting of the Entomological Club at your house, on the 17th instant. I had been too much occupied to hunt up anything, and on the afternoon of my intended visit strolled into my garden to find something wherewith to gratify you, when, behold! in less than five minutes, I was rewarded by catching a *Selandria*, which I at once recognized as new to our lists; and in the course of a few minutes caught two others, and lost one or two. Since then, however, I have succeeded in securing a pair (male and female) only. The insect is *Selandria sericea* of Hartig.—*Id. May 26, 1851.*

Occurrence of the Male of Lyda inanita.—While searching the rose-bed which produced the above-named insects, I was additionally rewarded yesterday by detecting the male of *Lyda inanita*, of which sex only one (in the British Museum) or two spe-

* The type of my genus *Dictyopteryx* (Cat. ii. 189) he makes the type of the genus *Peronea*, and calls it *Peronea* St. Curtis!! whereas not a single species of the insects included in his so-called genus is to be found in my works.

cimens have been observed in England. During the past ten years I have taken at least fifty females, on the same rose-bed, but never met with the male before.—*Id.*

New Locality for Hypena crassalis.—About fifty years since Mr. Plasted caught a specimen of the above insect near Westerham, in Kent; a fact he communicated to my late friend Haworth, who proceeded in due season to the spot, and supplied his cabinet with a pair: since then the insect has, I believe, only occurred in Devonshire. Being here on a visit, and having taken a trip to Westerham, reminded me of the above, and finding the general aspect of this neighbourhood correspondent with that of Westerham, I searched for the insect, and have this day been rewarded with three fine specimens; the notice of the capture of which I considered might be acceptable.—*Id.* Sevenoaks, Kent, June 17, 1851.

Anecdote of Wasps.—On the 11th of September, 1847, I was walking in the fields, when I suddenly discovered what I at first took to be a very long insect, flying very slowly, about five or six feet from the ground. I knocked it down, and found that it was two wasps *in coitu*, and they remained thus attached even after I had killed them. The female or queen wasp was much larger than the male or drone, and I never observed the difference between the sexes before. I kept these wasps for some time, and sent them by post from the town of Thornbury, in a tin box, directed to W. F. Evans, Esq., Entomological Society, 17, Old Bond St., but they never arrived. I suspect some "minion" at the post-office embezzled the box, in the hope of getting something very valuable; but one can easily imagine his disappointment at finding only a couple of wasps!! Mr. Ramsay, Inspector of the Post-office, was here on a prosecution, and when I mentioned to him the contents of my box he laughed heartily. In the year above mentioned I had nearly a hundred wasps' nests within five hundred yards of my house. I had about thirty destroyed in my home-field, close to the lawn. There seems to be a great scarcity of queens this year. I have seen only one here as yet. On the 27th of April I was feeding a weak stock of bees, when a queen wasp came to the entrance of the hive, and having smelt the honey, she made an attempt to enter, a gallant bee attacked her, and during the struggle I managed to kill the wasp. I seldom have seen a queen wasp attempt a hive, as there is a sort of instinctive feeling generally of their own importance and special self-preservation. Last year I killed about thirty at a young whitethorn hedge in May, with my walking-stick. They seem to be very fond of an insect that is found on a neatly trimmed thorn hedge, and also on the *wall* plum-trees, where I have some seasons killed a great number. I have made an observation, which seems verified this year, that wasps never appear nearly so numerous in the spring after a very mild open winter, as they do after a winter with much frost and cold weather. The same holds good as to the Bombinatrices. I am inclined to think that in an open winter the frail bodies of these insects are more exposed to the field mice and other marauding vermin in mild weather than during frost, or else the insects are tempted to move from their hiding-places at improper times, and so perish. Wasps are useful to butchers in hot weather, as they kill the blue flies. Dr. Darwin, in his 'Zoonomia,' relates a circumstance which he was eye-witness to. A wasp seized a large blue fly, and flew off with it, but the fly used his wings with such power in the air, that the wasp was obliged to drop on the ground with its prey. The wasp then deliberately bit off the wings of the fly while on the ground, and then carried off his victim without inconvenience. Dr. Bevan has also related this in his work on the 'Honey Bee,' after Darwin.—*H. W. Newman; New House, near Stroud, May 10, 1851.*

On Notommata parasita, a Rotifer inhabiting the Volvox globator.

By the Rev. R. C. DOUGLAS, M.A.

ALTHOUGH the following observations add little or nothing to what is already known of this remarkable parasite, they may perhaps be thought not unworthy of notice, as relating to a chapter of microscopic life seldom observed in this country. Last summer a paper on the subject was read before the Microscopical Society of London, (Zool. viii. 2891), and has been published in the last part of the Society's 'Transactions.'

On the 28th of May last, I gathered some *Mougeotia genuflexa*, from a pond about a mile and a half from Stafford, and on my return home transferred it to a wine-glass. Next morning I saw that the water was full of *Volvox globator*, but I did not examine any specimens microscopically, until the evening of Saturday, May 31st. The globes of the *Volvox* were then in active motion, and my attention was soon arrested by sundry oval bodies inside several of the globes; while examining these, a *Volvox* came across the field of the microscope, containing a Rotifer with cilia vigorously at work; this, I perceived, was the *Notommata parasita*, and at once conjectured that the oval bodies which had first attracted my attention might be eggs. Presently another *Volvox* came in sight, also containing a Rotifer. The two *Volvoes* were not full grown, but the parasites were of large size; their length, when fully extended, being about two-thirds of the diameter of the containing *Volvox*. They appeared perfectly indifferent to the motions of the *Volvox*, either floating freely within the globe, or holding on by their tails and allowing themselves to be carried round with it, their cilia all the time in active motion, the working of the gizzard, and the spot or "eye" being distinctly visible. Altogether it was an object of remarkable beauty and great interest. Patches of the surface of each *Volvox* were without the green gemmules or animalcules, but I could not detect the parasites actually devouring them, although in one globe a gemmule was partially detached, and was knocked about in the current made by the cilia of the Rotifer. The young globes which are generally found within specimens of *Volvox*, were absent in one case, and in the other were represented by one small fragment. Scarcely any *Volvoes* were seen entirely free from the parasite, although this evening I only observed two fully developed *Notommata*, one in each of the globes that were the subjects of the above observations. In many of the larger globes

there were two of the oval bodies or eggs. After watching them for nearly two hours, I set aside the live-box containing them for future examination.

Sunday, June 1. — I gave a hasty glance at the live-box directly after breakfast. The rotation of the Volvoces had become very feeble, in fact had nearly stopped in all except one large globe, which had the good fortune to be without a parasite. The two Notommata were as active as ever, and ciliary motion was distinctly visible through the transparent envelopes of some of the eggs.

June 2. — The large globe without a parasite had stopped moving like the rest, but four young globes inside of it were very active. The Notommata appeared as nimble as ever, some of the eggs were hatched, and two Notommata were discovered swimming about free, apparently enjoying their liberty. The fluid inside the infested globes looked slightly dirty.

June 3. — The young Volvoces noticed yesterday had escaped from the parent globe, but only one of them retained any power of motion. The Notommata in the globes were still alive, but languid. No more eggs were hatched.

June 4. — The Volvoces and parasites were all dead. This was the case in the wine-glass as well as in the live-box.

The Volvoces kept in the wine-glass with the Mougeotia were alive but sickly on the 2nd of June, and were quite as much infested with the parasite as those in the live-box. While looking over some specimens taken from the wine-glass, a Notommata was seen attached by its tail to the outside of a Volvox; it soon turned round and forced its way head-foremost into the interior of the globe. I am sorry that at the time I was only searching amongst these specimens with a one-inch object-glass, and can therefore give no better account of the process; perhaps it had previously forced its way out, and not liking the appearance of things outside, had determined on returning: however this may be, when a higher power was put on, and the Volvox moved about by carefully turning round the lid of the live-box, I was satisfied that an opening existed in the membrane of the Volvox, and that the Notommata was actually inside. In one very large Volvox, no fewer than three parasites were found; in this specimen also there remained only a small mass of green matter, where, under ordinary circumstances, several young globes would have been found.

In conclusion, I will only make two remarks: —

1. The large number of parasites observed seems worthy of notice;

in the case before related (Zool. 2891), only *one* Volvox out of a considerable number was found to be affected.

2. This peculiar kind of "parasitism" seems to bear some resemblance to that of *Rotifer vulgaris* in the cells of *Sphagnum* and the filaments of *Vaucheria*.

ROBT. C. DOUGLAS.

Forebridge, Stafford, June 5, 1851.

Notes on Observations in Natural History during a Tour in Norway.

By the Rev. ALFRED CHARLES SMITH, M.A.

(Continued from page 3134).

The Ermine (*Mustela Erminea*). I shot several of these pretty little creatures in the stony fjelds. They frequent those parts which are composed of broken rocks and mountains of loose stones; on this account their Norwegian name is "Rös-kat," or weasel inhabiting a heap of stones, the word "Rös" signifying a "stone heap." It was curious to see them dive in among these stones, and in a minute emerge again twenty or thirty yards distant from the spot where they went in: it was like the diving of the black guillemot; they appeared where you least expected them, and must have rushed along their passages under the rocks as quickly as they could above them. Though on the highest fjelds, and surrounded by perpetual snow, they were in summer costume, a light chocolate colour above, and faint yellow below, the black tips of their tails alone remaining unchanged in summer and winter dress.

The Lemming, (*Mus Lemmus*). Perhaps there is no living creature, not even the kraken (always supposing such an animal to exist), which has caused more wonder and speculation, and given rise to more fabulous tales among the wonder-loving and credulous Northmen, than the pretty little animal of which I am now writing, — the lemming, called in Norsk "Leman." It is about the size of our common rat; but in colour, markings, and general appearance, and almost total absence of tail, is very like the Guinea-pig. Like the ermine, to which it often falls a prey, it inhabits those fjelds which seem composed of boundless tracts of stone. Here these little creatures may sometimes be met with in such countless numbers that the whole mountain seems alive with them, darting in and out among the loose stones which compose their territory; now sitting up on their hind legs, showing their teeth, and squeaking in the violence of their excitement and rage, as

they see an intruder appear on the dominions which they have appropriated to themselves; now thrusting out a well-whiskered black nose, and a still blacker pair of little bright sparkling eyes, from behind some sheltering stone whither they have retreated in alarm, but whence their curiosity urges them to venture on a peep at their foe; now scampering away, and burying themselves deep down and far in among the loose stones which seem to form a honeycomb in the surface of the mountain for their special behoof; the lemmings are a constant source of wonder and amusement to the traveller, as he chances to cross a wild fjeld on which they happen at that time to be. Their presence, too, in these lonely and barren tracts, so far removed from all signs of man and his works of cultivation, imparts a feeling of society to the traveller, who hails them with joy, as serving to break the monotony of his dreary journey, and who delights to hear their angry cries and fierce squeakings, as pleasing contrasts to the uniform silence which reigns around.

It is strange what different effects the cries of various animals will have upon the mind, in the same or similar places. I have already remarked how painfully mournful it was to listen to the note of the golden plover, even on the hushed fjeld, when no other sound was to be heard; and how no less pleasing to hear the loud hoarse crowing and the prolonged guttural notes of the ptarmigan under the same circumstances: and as with birds, so with animals, the cries of some inspire us with feelings of delight, those of others with melancholy. As an instance of this, I shall never forget the effect of dreariness, and desolation, and mournfulness, produced by the shrill and startling whistle of the marmot, which occasionally broke the stillness of the scene in the midst of the most stupendous scenery in Switzerland, when I was crossing the Mer de Glace to the oasis of verdure in the midst of the ice called the "Jardin," at the back of Mont Blanc; while here, on the contrary, in the same kind of wild dreary scenery, the squeak of the little lemming, inharmonious though it was, always produced a sensation of pleasure in my mind. It seemed to speak of life, and happiness, and sociability, even in these dreary fjelds, and dissolved the spell of awe and melancholy that so naturally oppresses the spirits in such stern savage scenes of stillness, the very throne of grim silence. But it is not from the *locale* in which they are found, that the lemmings have become the subjects of so much marvellous fable, though this may be one remote cause of it, as their habits are little investigated in consequence; it is rather from their irregular appearance and sudden disappearance, and from the countless numbers

in which they sometimes migrate, and the excessive injury they do at such times by eating up everything before them, that they have become the themes of so many wild tales, and the sources of so much superstitious as well as natural dread to the Norwegians. Accounts seem to vary as to the frequency of these migrations; some said they invariably moved every third year; others (and amongst these, my friend and companion the Norwegian officer, on whose accurate knowledge of the Natural History of his country I place great faith) assured me that the migrations took place about every seven years: the probability being that they do not follow any prescribed rule as to time, but migrate as an increase of their numbers or want of food may prompt them. Certain however it is, that when they do so migrate, they become a very great plague to the inhabitants of that district, for so innumerable are they, in such countless myriads do they advance, that they destroy everything before them; and when the overwhelming mass has gone by, the luckless farmer looks in vain for the crops on which his subsistence depends; for the scourge of lemmings has as completely destroyed them, as did a similar plague of locusts in the land of Egypt in olden time. It is curious that they always advance southwards, invariably go straight forwards, and never return. They never go out of the course they have taken, but plunge into the lakes and rivers, and over the rocks, that come in their way, and multitudes are so destroyed, but what becomes of the main body of this vast army no one knows. They march principally by night, and so suddenly and unexpectedly that it was generally believed, and is still firmly upheld by many, that they dropped from the clouds. Undoubtedly "the plague of lemmings," as I have heard it called by the inhabitants, is one of the greatest scourges to which Norway is subject. I was fortunate in seeing these curious creatures on two occasions. I met with them sparingly on the Sogne Fjeld, and in great numbers on the Fille Fjeld: in the latter place they abounded to such a degree that I could count thirty within a hundred yards: the whole mountain seemed alive with them, and the little black lake at the summit was quite fringed with their dead bodies; so that I could understand something of the almost incredible numbers said to congregate at their migrations, when the dense populations of these mountains join their forces together for a move to the South.

The Squirrel, (*Sciurus vulgaris*). I know nothing more elegant than the motions of these active little fellows, as they skip from branch to branch, or run along the boughs, or up and down the trunks of trees, and traverse considerable distances without touching the earth.

The immense forests of Scandinavia are well suited to them, and there they abound in great numbers; and many a time, when wearied with driving day after day through these interminable forests, have I been amused by stopping to watch the gambols of the squirrels, as they darted across the road and chased one another among the trees; the deep sand of which the road is composed, preventing any noise of the carriage or sound of the pony's feet from heralding my approach: and many times have I pulled up, and sat for many minutes within a few yards of these frolicsome little fellows, while they continued their gambols quite unconscious that they were being observed, and were within a very little distance of a loaded gun. But that gun was never lifted against them, excepting on one occasion, when I fired from my lair in the carriage, and killed a very fine one, whose skin I was anxious to procure as a specimen, but whose untimely death I could not help deploring, as he fell from the bough on which he had been gambolling; and I half regretted his barbarous murder, although the sight of his beautiful skin soon dispelled all qualms of conscience upon that score. I was also fortunate in procuring some winter skins of the squirrel, which were gray, and exceedingly warm and thick, and are much sought for by the Norwegians and Laplanders on that account.

The Hare, (*Lepus variabilis*). Having seen in Murray's admirable 'Handbook for Norway,' and in other descriptions of sporting in that country, frequent mention of hares, I expected to find them very abundant, and indeed I know that others have found them in some numbers; yet, strange to say, though I was peculiarly fortunate in falling in with game of almost every other description, and although I wandered about in search of game in every kind of country, fjeld and forest, mountain and valley, heath and underwood, rough and smooth, stony and grassy tracts, I only saw a hare on one occasion; and then I was driving through the skirt of a forest, when the hare in question darted across the road, and up the hill-side, where he sat very composedly at about a hundred yards' distance, apparently for me to watch him. He seemed of rather large size, and was of a light gray colour, in which he assimilated very closely to the rocks and loose stones around. I left the carriage, and taking my gun, went in pursuit; but he was too wary to let me stalk him, and bounded away before I could get within shot. These hares become perfectly white in the winter, in common with so many other of the quadrupeds and birds that inhabit those snowy regions.

ALFRED CHARLES SMITH.

Old Park, Devizes, June 4, 1851.

(To be continued).

Anecdotes of the Common Fox, (*Vulpes vulgaris*, *Briss.*)—I understand that it is an ascertained fact, that the common fox devours shell-fish readily, when pinched by hunger. Our rocky sea-line and deep abrupt ravines, with their patches of heath and furze, in a country far from being generally wooded, afford inviting ground for the settlement of this animal; and accordingly it has always been known as a frequent and by no means welcome visitor along our shores. The two following anecdotes are current among the inhabitants of Pennan (Zool. 2997), and are reported on their good authority as having happened, the one, something more than fourscore years ago, the other, about thirty years later. An old fisherman, of strict integrity as was ever believed, who lived and died in the above-named village, on going out one calm morning to the rocky beach which lies to the east of the tiny harbour, was somewhat surprised by coming on the body of a fox, not very far out of low-water mark. He wondered, as is said, how Mr. Fox, usually so wary, should have come there; and on attempting to turn him over, his surprise was increased on finding that he seemed fixed to the beach by the mouth. It was not properly by the mouth, as a narrower inspection discovered; he was held to the rock by the tongue. Endeavouring to detach a limpet, he had succeeded, as is presumed, in raising one edge by the force of his jaw, and at this stage insinuated the point of his tongue, when his hold giving way, the whole power of a full-sized limpet compressed it to the rock: and thus was he bound, like honoured martyrs of a bygone age, to await the choking tortures of the approaching tide. He waited and he perished; the risen waters waved their crest over him; and when they retired after triumph, hapless Reynard's remains were there to testify that victory is not always to the strong, nor wily cunning security against misfortune. The other anecdote may be soon told. A fisherman, the grand-uncle of my obliging friend, Mr. West, on coming in from sea one evening, had his boat hauled up on the beach, leaving in it a hand-line baited, with the view of catching "dogs," (*Spinax acanthias*). One of the hooks had been inadvertently left dangling over the gunwale of the boat. On going out to his boat next morning, what was his marvel when, line in mouth, and hook fixed deep in the throat, lay the lifeless body of a huge specimen of the common fox. I have every confidence in the truth of both the above statements, as made to me by individuals of the highest intelligence and integrity.—*Geo. Harris; Manse of Gamrie, Banffshire, May 23, 1851.*

Winter Dress of the Ermine (*Mustela Erminea*).—The annual assumption by our blood-thirsty little friend, the stoat, of the garb destined by its semblance to be, amid the snowy regions of the North, its protection from enemies and a shield from the observation of its prey, is of more frequent occurrence farther south than is intimated in Mr. Bell's communication (Zool. 3102). Whilst a resident in the valley of Honiton, in Devonshire, in latitude some twenty miles farther south than Selborne, a winter of ordinary severity seldom elapsed without affording me an opportunity of examining the stoat in various stages of this interesting seasonal change. My own little collection is replete with examples varying from the stoat in its general summer dress, by numerous intergrades up to as pure an ermine, in as far as colour is concerned, as can adorn the fur-countries of the North. When however we compare the quality of the produce of Siberia with our own native ermine, we find ourselves far inferior, and the beneficence of the Creator in adapting the same animal, by modifying the density of its covering, to a widely differing habitat, is beautifully obvious. But what I would here particularly remark is, that of the many stoats I have hitherto had the opportunity of dissecting, in no case in which the subject had so far acquired the white dress as to

deserve the appellation of an ermine, did the animal prove a male; and among those which had assumed the change in a less degree, the number of females is in such excess, that a male becomes quite a rarity. Hence I strongly suspect the female to be by far the most susceptible of this change, and shall be happy to learn, through the medium of this journal, whether the observation of other naturalists on this point has led to concurrent testimony.—*Edward Murch; Maidenhead, May 30, 1851.*

Dates of the Arrival and Departure of Migratory Birds in Oxfordshire during the Year 1850.—

	When first seen.		Week in which seen for the last time.
Chiff-chaff	March	30	I October.
Swallow	April	6	III October.
Wryneck .....	...	10	IV August.
Blackcap .....	...	14	
Redstart .....	...	14	IV August.
Nightingale.....	...	14	IV August.
Willow Warbler .....	...	17	IV September.
Yellow Wagtail .....	...	18	I September.
Martin .....	...	19	III October.
Lesser Whitethroat.....	...	22	
Cuckoo .....	...	22	II July.
Common Whitethroat.....	...	24	III September.
Grasshopper Warbler.....	...	24	III September.
Wheatear.....	...	24	II September.
Tree Pipit .....	...	26	II September.
Sand-Martin .....	...	27	III September.
Garden Warbler .....	...	28	
Sedge Warbler	May	3	II September.
Red-backed Shrike.....	...	6	
Great Plover .....	...	7	
Night-jar.....	...	9	III September.
Whinchat .....	...	9	II September.
Swift .....	...	13	II August.
Hobby .....	...	15	I October.
Turtle Dove	June	1	IV September.
Snipe	August	12	II April.
Teal.....	September	8	
Merlin.....	...	11	III April.
Jack Snipe .....	...	16	II April.
Woodcock	October	22	I March.
Fieldfare	November	6	II April.
Redwing .....	...	23	I April.
Golden Plover.....	December	2	
Gray Wagtail .....	...	13	I May.
Common Sandpiper			III August.

The arrival of the spotted flycatcher, and of one or two other species, was not observed until so late as to render any note of their appearance useless. A male of the blackcap warbler was seen near this place on the 1st of December, apparently in good health; the weather was then very severe for the season, the mercury having been as low as 17° Fahr.—*A. Matthews ; Weston-on-the-Green, April, 1851.*

Notes on the Arrival of Migratory Birds at Lewes, Sussex.—

March 21. Three wheatears were seen on the Downs.

„ 25. On the morning of this day I saw a solitary chiffchaff, but did not see or hear another until the 1st of April, when I saw several.

April 1. A solitary swallow was seen.

„ 5. At 2 o'clock in the afternoon I heard the blackcap singing with all his might; a wryneck had also arrived.

„ 10. Late in the evening of this day the nightingale was filling the woods with his glorious melody.

„ 14. On this day I saw several house-martins.

„ 16. Numbers of willow-wrens came, but departed northward the same afternoon. Several whinchats, whitethroats, a few tree-pipits and ring-ouzels also arrived in the course of the day.

„ 17. The sedge-warbler was to be heard complaining in every ditch and osier-bed, and the cuckoo was heard in several places.

„ 18. The yellow wagtail came in numbers.

„ 19. Early in the morning of this day I missed my favourite blackcap, and after some search I found out the cause—his mate had arrived.

„ 24. The wood-wren arrived.

„ 26. Lesser whitethroat.

May 5. I saw a single swift.

„ 12. I saw a male red-backed shrike.

„ 15. The spotted flycatcher was very busy among the insects; and the garden warbler sang his harmonious song on the same day.

I did not ascertain the exact date of the arrival of the reed-warbler, and have been told that the red-backed shrike was seen on the 1st of May, which is the usual date of its arrival, and I was much surprised at not meeting with it earlier. Blackcaps have been exceedingly numerous this year, and the plumage of all the birds was splendid.—*J. B. Ellman; Lewes, May 15, 1851.*

Observations on the Arrival of Hirundinidæ in Norfolk this Spring.—

Chimney-swallow (*Hirundo rustica*) April 18. Weather mild, wind South.

Sand-martin (*Hirundo riparia*) ... „ 19. Weather mild, wind varying from South-west to South-east.

Window-martin (*Hirundo urbica*)... May 2. Weather mild, wind varying West by North-west.

Common Swift (*Cypselus Apus*) ... „ 7. Weather milder than in the three preceding days, wind West.

—*J. Harper ; Norwich.*

Late Sojourn of Swifts in 1850.—According to my journal of last year, I saw two of these birds hawking for insects as late as the 29th of August.—*Id.*

Display of Parental Affection by Martins.—I beg to record the following instance of parental affection exhibited by a pair of the common martin, as it seems to place beyond a doubt their inability to withstand the temperature of our winters, even dur-

ing a season of almost unparalleled mildness, and is strongly opposed to the notion that any birds of this genus can pass that period in a torpid state. At the time of their autumnal migration, these birds were unfortunately engaged in rearing a small family of young, and while multitudes of their kindred were daily passing in search of more sunny climes, the love of their offspring overcame their natural habits, and they remained behind. Towards the end of October their strength visibly declined, from this time they were less frequently seen, and at length disappeared and were forgotten. Of their fate nothing more was known, until, in March last, a nest was removed from the eaves of our stable, containing the skeletons of three half-fledged young, and over them those of the two old birds. Thus faithful to the last, they had perished a voluntary sacrifice to parental affection. I feel convinced, that the most humane course to pursue with regard to any such stragglers, would be at once to destroy them as soon as the main body of their species has left our shores; by any other treatment they are only exposed to a more lingering, but no less certain, death. — *A. Matthews; Weston-on-the-Green, April, 1851.*

Occurrence of the Pied Flycatcher (Muscicapa atricapilla) at West Firle, near Lewes, Sussex. — An adult male specimen of the pied flycatcher was shot at Firle Place, the seat of Viscount Gage, on the 1st instant, and is now in my possession. This bird has only been recorded to have been obtained three times in this county. — *J. B. Ellman; Lewes, May 4, 1851.*

Occurrence of the Gray-headed Wagtail (Motacilla neglecta) at Great Yarmouth. — A fine male specimen of the gray-headed wagtail, which was shot here on the 18th of last April, has been presented to me. I have preserved it, and it is now in my possession. — *John Smith; Great Yarmouth, May 20, 1851.*

Occurrence of the Cirl Bunting near Bristol. — It may not perhaps be uninteresting to some of the readers of the 'Zoologist,' to learn that the cirl bunting (*Emberiza Cirlus*) has, within the last five or six years, become a constant resident in this part of Gloucestershire; and I have, during the present month, discovered the nest of a pair of these birds, in a small cypress in one of my plantations. Only three eggs were deposited, the birds having probably been disturbed by my visits to the nest. Neither Yarrell nor Montagu mentions the breeding of these birds in Gloucestershire, though I have long known them to be abundant during the *winter* in the adjoining county of Somerset, but until lately could never obtain a specimen from this neighbourhood. — *William Knapp; Hart's Cottage, Alveston, Bristol, May 27, 1851.*

Occurrence of the Bohemian Waxwing in Shetland. — On the 1st of last month, I had a fine specimen of the Bohemian waxwing (*Bombycilla garrula*) sent to me, taken at Northmaven, in the north part of Shetland. About the same time there was one obtained at Lerwick, and a third was seen at a place called Aithsting, about four miles from here. — *Robert Dunn; Helister, near Weesdale, Shetland, N. B., May 19, 1851.*

Occurrence of the Hoopoe at Walmer. — A fine specimen of this beautiful bird was shot a fortnight since, in Lower Walmer. It weighs about 12 ounces, and is nearly 12 inches in length. This, with the seven recorded in the 'Zoologist' for June, would seem to evince that this "fair feathered one" is becoming yearly more partial to our clime; but how annoying is it to the real lover of Nature, to learn that no sooner does that occasional visitant take up its abode with us, than it is shot by the hand of some one, whose heart wars with the outward world of beauty, and whose mind is too bloody to appreciate the perfect form of the hoopoe, or any other created thing. Is it not a disgrace to our naturalists, to our Magazines of Natural History, to every enlightened

man, this daily butchery of rare and beauteous birds?—*W. H. Cordeaux; Canterbury, June 8, 1851.*

The Great Snipe (Scolopax major) breeding in Norfolk.—In the April of 1846, I found a nest of the great snipe, containing four eggs, one of which is now in my collection, the others were broken by a boy who was with me, whilst stepping into my boat. The nest was placed in a tuft of grass, in some marshes at Belough, near Wroxham, in this county. I had a good opportunity of observing both the birds, as they did not rise in the usual quick manner of the common snipe, but much more leisurely, and continued to hover round the nest for some little time. A male specimen of this bird was shot near Lowestoft, in Suffolk, the latter end of April in this year. — *P. E. Hansell; Thorpe, next Norwich, June 6, 1851.*

Occurrence of the Eared Grebe (Podiceps auritus) at Yarmouth.—Two fine specimens of the eared grebe, male and female, in full summer plumage, were shot at Yarmouth on the 17th of April last. The eggs in the female were in a forward state—the size of a small marble. The birds are now in the possession of *J. Green, Naturalist; 1, East Road, City Road.*

Hybrid between the Common Mallard and the Pintail Duck.—About the second week in March, a beautiful hybrid duck, between the common mallard (*Anas Boschas*) and the pintail (*Anas acuta*) was shot near Standlake, Oxfordshire, and was brought into the Oxford market for sale, among other wild fowl; but having fallen into the hands of Mr. Osman, the Taxidermist, I eventually was fortunate enough to obtain possession of it. Although these hybrids have not unfrequently been bred in confinement, I am not aware of one having ever been before shot in its wild state.—*A. M. Norman; Christ Church, Oxford.*

Occurrence of the Egyptian Goose at Yarmouth, and the Pink-footed Goose at Ely. Two specimens of the Egyptian goose (*Anser Ægyptiacus*), male and female, in a wild state, were shot by a fisherman, off the Yarmouth coast, on the 28th of April last; and on the 3rd of May, 1851, three examples of the pink-footed goose (*Anser brachyrhynchus*), one male and two females, all old mature birds, were shot at Ely, Cambridge-shire. All the above are now in the possession of *J. Green; 1, East Road, City Road.*

Occurrence of the Egyptian Goose on Derwent Lake.—On the 2nd of this month a fine specimen of this rare bird was shot on Derwent Lake, by Mr. Thos. Hudspith, game-keeper to H. C. Marshall, Esq., and is now in his possession. This, so far as I am aware, is the first instance of this bird having been met with in this district.—*J. Harrison; May 19, 1851.*

Occurrence of the Puffin (Alca arctica) in Winter.—On the 27th of February, I picked up on the Chesil Beach, five specimens of the puffin, all dead. The only difference in their plumage from that of summer, was that the bill was not so vividly coloured, and the cheeks are of a dark lead-gray. One individual was caught alive on the rocks under Portland, in the month of January: it was very emaciated. We have had a long succession of South-westerly gales. The above five individuals had evidently been dead ten days or a fortnight.—*William Thompson; Weymouth.*

Note on the Pholas dactylus, or Sussex Piddick.—While residing here having had opportunities of studying the habits of *Pholas dactylus*, I have endeavoured, during the last six months, to discover how this mollusk makes its hole or crypt in the chalk,

whether by a chemical solvent, by absorption, by ciliary currents or by rotatory motion. My observations, dissections, and experiments, set at rest all controversy in my own mind. Between twenty and thirty of these creatures have been at work in lumps of chalk, placed in sea-water in a finger-glass and a pan, at my window, for the last three months. This *Pholas* makes its hole by grating the chalk with its rasp-like valves, licking it up when pulverized with its foot, forcing it up through its principal or branchial siphon, and expelling it in oblong nodules. The crypt protects the *Pholas* from *Confervæ*, which, when they get at it, grow, not merely on the outside, but even within the lips of the valves, preventing the action of the siphons. In the foot there is a gelatinous style or spring, which, even when taken out, has great elasticity, and seems to be the mainspring of the motions of the *Pholas*.—*John Robertson* ; 48, *Queen's Road, Brighton*, June 6, 1851.

“*Shower of Snails*.—An extraordinary scene was witnessed at Bradford, about twelve miles from Bristol, on Saturday week, when that village was visited by a heavy shower of snails. They might have been gathered by bushels.”—*Stroud Free Press*, May 23. What a curious thing it is, that all the showers of frogs, snails, and other things, which are as regularly reported in the papers as Siamese-twin calves and monstrous turnips, should, like the wonderful cures performed by Morison's Pills and Holloway's Ointment, always occur in out-of-the-way places, where nobody seems to take the trouble to investigate them. Now as to the above “shower” of snails. — Where did it come from ; did any one see it fall ; did it cease quickly, or was it of long continuance ? Did any one preserve a single specimen out of the “bushels” that fell ; or were they so broken, as might be expected, that no whole ones could be found ? And if any were preserved, of what species are they ? What sort of weather was it when this molluscous visitation happened ; in what sort of a cloud-chariot did it come ; was there much wind, and from what quarter ? It is very desirable that these questions should be answered ; and among the numbers of persons who must have seen the “shower,” and its residuum of “bushels” of snails, surely some one can be found who can reply to them.—*J. W. Douglas* ; 2, *Eton Grove, Lee*, June 6, 1851.

Proceedings of the Zoological Society.

Evening Meeting, May 13, 1851.—J. E. GRAY, Esq., F.R.S., in the chair.

Mr. Gould communicated a paper by Dr. Nicholson, on a new species of *Francolin* discovered by him in Arabia. This bird, which appears from Dr. Nicholson's drawing to be most probably worthy of generic distinction, was provisionally characterized under the name of *Francolinus* — ?

The Secretary read a paper by Dr. Davy, communicated by Mr. Spence, which gave a detailed account of his observations on the eyes of the mole from actual dissection.

Mr. Gray communicated the description of a new species of *Bulimus*, by Mr. Ernest Devicke, who had himself discovered it in the neighbourhood of Valparaiso.

Mr. Lovell Reeve added some remarks upon this species, of which he had also prepared a description.

Mr. Cuming communicated an account of forty-nine new species of *Miton* from his own collection, drawn up by Mr. Arthur Adams.

The Meeting then adjourned to the 27th of May.

Evening Meeting, May 27, 1851.—WM. YARRELL, Esq., in the chair.

Mr. Vernon Harcourt exhibited a large and very interesting series of birds, which he had collected in Madeira, and favoured the meeting with some remarks upon their habits and distribution.

Mr. Oswald communicated a notice by Mr. Mack, upon the fact of a white duck laying black eggs.

Mr. Cuming communicated a paper by Dr. Pfeiffer, describing many species of new shells from his own collection.

The Secretary read a letter from Capt. Hutton relative to the habits of *Ursus isabellinus*, *Horsf.*, of which he had transmitted to England a living specimen, now in the Menagerie.

The Secretary also read a letter from Dr. Bowring respecting the range of the Mandarin duck (*Aix galericulata*), in China, and informing him of the shipment of three living pairs of that bird for the Society.

Mr. Cuming communicated a Monograph of Trochidæ by Mr. A. Adams.

The Meeting adjourned to June 10.

Monthly General Meeting, June 5, 1851.—The Rt. Hon. Sir G. CLERK, Bart., M.P., Vice President, in the chair.

Miss Fry, Lord Leigh, W. H. Flower, Esq., F. Thompson, Esq., J. D. Llewellyn, Esq., and G. R. Waterhouse, Esq., were elected Fellows. F. H. Gabriel, Esq., James Blyth, Esq., Professor Percy, H. Wilson, Esq., J. Lubbock, Esq., C. S. Crowley, Esq., and — Evans, Esq., were proposed as Candidates for the Fellowship.

The Report of the Council stated that among the additions to the Menagerie during the month of May, was included a second specimen of the great Malayan tapir, which had been obtained for the Society through the obliging exertions of John Dunbar, Esq., Judge of the Suddur Court at Calcutta. A living specimen of the great red kangaroo from the interior of Australia, has now been obtained for the first time; and among the donations, there are two other Australian species, which are also entirely new to the collection. These are the *Œdienemus grallarius*, presented by Dr. Mayo, and a singularly curious lizard, presented by the Hon. Mr. Hope.

The number of visitors during May, presented a large increase over the corresponding period of last year, and was, in fact, the largest ever known.—D. W. M.

Proceedings of the Entomological Society.

June 2, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the respective donors:—‘The Zoologist’ for June; by the Editor. ‘The Athenæum’ for May; by the Editor. ‘Entomologische Zeitung’ for May; by the Entomological Society of Stettin. ‘Bulletin de la Société Impériale des Naturalistes de Moscou,’ 1850, No. 2; by the Society. ‘Abhandlungen der Mathematisch-Physikalischen Classe der Koeniglich Bayerischen Akademie da Wissenschaften,’ band v. parts 2 & 3; Bulletin, ditto, 1848—50: by the Academic. ‘Hymenopterologische Studien von Arnold

Foerster;' by Mr. Stainton. 'Insecta Saundersiana, Diptera, part 2;' by W. W. Saunders, Esq. A box of Cape insects, by — Rooper, Esq., through Mr. Spence. A fine hornet's nest, found in an uninhabited cottage near Thornbury Park, Gloucestershire; by H. W. Newman, Esq.

H. W. Newman, Esq., Thornbury Park, Gloucestershire, and Herr Ernst A. Zuckold, Halle, Prussia, were elected Members of the Society; and Alfred Beaumont, Esq., Huddersfield, a Subscriber.

Mr. Spence, on the part of Mr. Ellis, exhibited some oak leaves attacked by two different larvæ, one of which was Lepidopterous, and the other, which had rolled up the leaves, was Coleopterous.

Mr. Rich exhibited some splendid Goliath beetles in the finest condition.

Mr. E. Shepherd exhibited a bred specimen of *Vanessa Io*, remarkable for the nearly white colour of the wings towards the extremity. He mentioned that Mr. Bond had a similar bred specimen; and that Mr. Doubleday possessed another, taken at liberty.

Mr. Preston exhibited an *Anthocharis Cardamines*, recently captured, destitute of the green markings on the under side.

The President exhibited from his own garden, cases of larvæ of *Coleophora Hemeobiella*, which, as he had noticed, fed on the under side of pear-leaves. He had also observed on the same trees larvæ of *C. nigricella*, feeding upon the upper side of the leaves; another case-maker which fed at the base of the leaves; and a fourth, with a very rough case, which fed all over the leaves indiscriminately: besides a larva under a transparent web, and some leaf-rollers. He also stated that he had again found the once rare *Lyda fasciata* in considerable numbers, several species of *Curculionidæ*, and *Cemistoma scitella*, all in his own garden, showing how many species might be found in a small space.

Mr. Augustus Sheppard exhibited a male *Smerinthus Populi*, found at liberty, with a long appendage at the base of the right under wing, but distinct, apparently of the same texture as the wing, and, like it, covered with scales.

Mr. Stainton exhibited some cases of the larvæ of *Coleophora paripennella*, found on a fence at Brixton, where he had observed them to assume a position parallel to the fence, by reason of the case being abruptly curved near the mouth.

Mr. Douglas exhibited one of the larva-cases off *Origanum vulgare*, of which he had spoken at the January meeting. It had been stationary since the middle of March, but no insect had yet emerged.

Mr. J. F. Stephens exhibited from his own garden specimens of *Selandria sericans*, *Hartig*, a new British species of *Tenthredinidæ*, and a male and female of *Lyda inanita*.

Mr. Saunders exhibited some rare Homoptera, and a moth accompanied by its pupa-skin and transparent cocoon, similar to one exhibited by him at the meeting in June, 1850; all received from Assam.

Mr. Smith mentioned that he had seen a specimen of *Gastropacha Illicifolia*, a new British species, captured on heather at Channock Chase, Staffordshire, in the middle of May, by Mr. Atkinson.

Mr. S. Stevens exhibited several specimens of a new species of *Mecinus*, found in company with *Baris Atriplicis*, about the roots of *Plantago maritima*, growing below Gravesend; also a new species of *Limonius* from oaks near Tooting. He likewise exhibited fine specimens of *Eupisteria carbonaria*, recently taken in Perthshire by Mr.

Weaver; and some remarkably beautiful butterflies, including one which he believed to be the male of *Papilio Zagrus*, captured on the banks of the river Napo, district east of Quito, South America, and sent home between folds of paper.

The following note by Mr. Rich, on a *Goliathus Cacicus* which he had alive nearly five months, was read.

"In going on board a vessel which had arrived two days prior from Africa, I saw suspended in the lamp-glass a fine female *Goliathus Cacicus*, which at the time was very dormant, and on inquiry of the steward found it had been so ever since the vessel came into soundings, the weather being much colder than before; that it was hung in a draft, but it had been very lively during the passage home, and fed freely on saturated biscuit and sugar: it had been on board more than three months. On purchasing it of the captain, I put it in my hat, and did not expect it to live, but on going homewards, found it not quite so dormant, as by a sudden movement, after it had been there some little time, I felt something equal to a dozen lancets running into me, which will readily account for my having so many specimens with the tarsi gone, the natives not liking to handle them. On arriving at home I found the beetle to be exceedingly active and restless; and having at the time a large *Fuchsia* in bloom on the table, I put it on the pot, when it immediately ran (if I may so term it) up the plant to the top, and to my surprise took flight to the window, where there stood a vase of roses, and immediately began to bury its head in the centre of a rose, and appeared to be eating. The flight was very rapid, and accompanied by considerable noise. The sun coming out, I left the beetle for some little time, when on going into the room again, and coming suddenly upon it, it directly took flight; and I afterwards found that by making a sudden noise, it would invariably do so if the sun were out. I could rarely get it to take flight if the sun were not shining, but at all times it was very watchful, and at the slightest noise would erect its antennæ, and look towards the point whence the noise proceeded, and then lie quite still; but if the noise were repeated, the beetle would take flight. On giving it its liberty, which I generally did every day, by allowing it to crawl over me, I found that it would always take three or four steps, then stop and look about, then a few more steps, and if I chanced to move my hand, or any one came near me, it would take flight. After having it some time, and always feeding it myself, it came quite to know me, would not start, and would come to my finger if I held it out, and if there was no sugar, it seemed quite disappointed. I believe that it knew my voice, having tried it several times when several persons were in the room, for as soon as I spoke to it, if previously quite still, it would brisk up and be quite restless until I fed it, which was invariably with sugar, or honey, and a little moistened biscuit or bread. As far as I could I supplied it with roses, having tried it with many flowers, but to none was it so partial as to the rose. After feeding it invariably cleaned its antennæ, and the tarsi also, if by chance either of them had touched the sugar. The antennæ were cleaned by using the two fore tarsi, and drawing them to its mouth; the hair on the middle and lower legs was used to clean the wings and elytra."

Observations on the *Bombinatrices*, by H. W. Newman, Esq., were read, and some remarks made thereon by Mr. F. Smith.

The President read the conclusion of his Memoir on the genus *Evania* and its allies.

The President announced that Herr de Haan, an Honorary Member of this Society, had for a long time made researches into the venation of the wings of butterflies, with reference to their metamorphoses, general structure, and economy, in which he had received great assistance from M. Milne-Edwards, at Paris, and he now sought

the help of English entomologists, in furnishing him with specimens of diurnal Lepidoptera, stating that it would be sufficient for his purpose if there were but an upper and an under wing free from damage.

Herr Helfrick, of Berlin, had also intimated his desire to exchange with any of the Members, specimens of the larger European Lepidoptera for English species.

It was announced that Part 5, Vol. i. n. s. of the Society's 'Transactions,' was ready for delivery.—*J. W. D.*

Proceedings of the Microscopical Society of London.

May 21, 1851.—GEORGE SHADBOLT, Esq., in the chair.

Thomas Chamberlain, Esq., Jabez Hogg, Esq., John Ladds, Esq., William Ladd, Esq., Joseph Taylor, Esq., and George Field, Esq., were balloted for and duly elected Members of the Society.

A paper by George Shadbolt, Esq., On the Sporangia of some of the Filamentous Fresh-water Algæ, was read.

After stating that the facts to which he wished to direct the attention of the Society, were, if not hitherto *entirely* unknown, at any rate, not made public, so far as he had been able to ascertain, the author proceeded to describe that he had ascertained that the sporangia of *Zygnema quadratum*, *Z. varians*, and of another of the Algæ, probably a species of *Tyndaridea*, undergo a gradual change of form, and finally assume a stellate character, precisely similar in appearance to the so-called *Xanthidia* found in sections of flint, and analogous to the stellate sporangia of the allied family of the *Desmidiæ*. That consequently the figures of the sporangia of the above-named species, as given in Hassall's 'British Fresh-water Algæ,' though perfectly correct as far as they go, are only figures of the fruit in a transition state. The author suggests, that as *Zygnema quadratum* is a species in which conjugation occurs between contiguous cells of the *same* frond, while, on the contrary, in *Zygnema varians* it takes place between those of *different* filaments, in all probability a similar change to that described ensues with regard to the sporangia of all the species in both the subdivisions of the genus, and possibly in most, if not in all, of the family.—*J. W.*

Proceedings of the Society of British Entomologists.

The June meeting of the above Society was held at the Society's rooms, 10, Fountain Place, City Road, on the 3rd instant: Mr. HARDING, President, in the chair.

The following insects were exhibited:—*Trochilium culiciforme* and *Acasis viretata*.

The President remarked that this had been the most backward season he ever remembered; he had taken many of the early Lepidopterous insects as late as the 20th of May: for example, he had taken *Tæniocampa gothica*, *T. stabilis*, and *T. gracilis*, as well as *Anticlea badiata*, as fine as if they had but just emerged from the chrysalis, three months after their usual time of appearance; and many Diptera, which usually appear at the beginning of the month, did not make their appearance until the 28th.

Some seed-heads of *Centaurea nigra* were exhibited, which contained the chrysalis

of a dipterous insect in a cell at the bottom of the seed-head: the cell-walls were so strong, that it required a sharp knife to get at the interior.

Mr. Norman presented to the Society a specimen of *Vanessa Antiopa*, taken in Lordship Lane, Stoke Newington, in 1847.

The President having informed the Members present that Mr. Bates, the unwearied and enterprising naturalist, whose exertions in Parà and the Amazons have tended to render the study of Entomology more interesting, was about to return to his native country, after an absence of three years devoted to that beautiful branch of Natural History; it was universally agreed, on a motion from Mr. Harding,—That the thanks and congratulations of this Society should be tendered to him on his arrival: and that it would suggest to naturalists generally, but more particularly the entomologists of this country, that a meeting or soirée should be held, to which Mr. Bates should be invited, personally to congratulate him on his safe and successful tour.—*J. F. Norman, Secretary.*

Capture of Notodonta trepida, Cleora cinctaria, &c.—On Friday, May 30, I went to Delamere Forest, in company with Mr. N. Cooke, of Warrington, and there had the good fortune to capture a very fine pair of *Notodonta trepida*, sitting on an oak. I have also in my possession thirteen specimens of *Cleora cinctaria*, taken on alders by my father, in Argyllshire, about the 15th of May; and two specimens of *Calocampa vetusta*, taken on sallows in the same locality: as well as *Taniocampa gracilis*, which was there in great numbers.—*E. C. Buxton, jun.; Kenyon House, Manchester, June 3, 1851.*

Occurrence of Eucera longicornis at Peckham.—A little greenhouse in which flowers have been as abundant throughout the spring as they were scarce out of doors, seems a sort of bee-trap: the bees enter through the open windows, but cannot find the same mode of exit, and crawling to the glass, die in considerable numbers. Among them *Eucera longicornis* is an occasional victim; but *Anthophora retusa* and *Apis mellifica* are the most abundant.—*Edward Newman.*

Earth-worms destroyed by Grubs.—Two or three of your correspondents have recently communicated instances of the earth-worm being attacked and killed by grubs and other larvæ. The facts they have mentioned are very interesting, and to me quite new. I find, however, in Kirby and Spence's delightful work, mention made of a very similar circumstance; and as you may perhaps have other readers as ignorant of Entomology as myself, allow me to transcribe the passage for your pages. It occurs in the ninth letter or chapter of the first volume, and is as follows:—"The common earth-worm is attacked and devoured by a centipede (*Scolopendra electrica*); Mr. Sheppard saw one attack a worm ten times its own size, round which it twisted itself like a serpent, and which it finally mastered and devoured."—*W. F. W. Bird; 5, King's Road, Bedford Row, June 13, 1851.*

Entomological Localities. By J. W. DOUGLAS, Esq.

(Continued from page 3106).

WEST WICKHAM WOOD.

"There grew pied wind-flowers and violets,
 Daisies, those pearly Arcturi of the earth,
 The constellated flower that never sets;
 Faint oxlips; tender bluebells, at whose birth
 The sod scarce heaved; and that tall flower that wets
 Its mother's face with heaven-collected tears,
 When the low wind, its playmate's voice, it hears.

"And in the warm hedge grew lush eglantine,
 Green cow-bind and the moonlight-coloured May,
 And cherry blossoms, and white-cups, whose wine
 Was the bright dew yet drained not by the day;
 And wild roses, and ivy serpentine,
 With its dark buds and leaves, wandering astray."—*Shelley*.

MOST prolific in Lepidoptera is this wood, the cause being doubtless the variety of plants growing here, and from March to October the collector will find something new continually appearing. Situated between West Wickham and Addington, it is easily accessible from London by the Croydon Railway; it is moreover one of the few woods near town where an entomologist can go without reading "Trespassers will be prosecuted." On the highest part the soil is sandy peat, where grow only heath and fir-trees: immediately adjoining this, towards Addington, the soil becomes stiffer, and here is a grove of beech and oak. The rest of the wood, towards Wickham and Shirley, is composed chiefly of oak, birch, and hazel, mixed with willow, spindle, and many other shrubs; and everywhere the ground is covered with a mixture of plants too numerous to mention. The following list of insects is given to show what has been found; a diligent worker would doubtless be able to add some rarities to it; but for one to be aware of the riches of the place, it must be *worked* and visited again and again.

Trochilium Myopæformis. On the flowers of *Euphorbia Amygdaloides*, in May.

Sesia Bombyliiformis and *Fuciformis*. Hovering over the flowers of *Ajuga reptans*, in May.

Ægeria Bembeciformis. Bred from a stump of willow.

- Lithosia complana*. Flying at dusk.
Euthemonia Plantaginis. Kicked up among underwood.
Limacodes Testudo. Larva beat from oaks.
Notodonta Carmelita. Fence in the Addington-road, (Zool. 3152).
Acronycta Ligustri. Larva beaten from ash.
Noctua Dahlii. Flying over heath, in August.
Chersotis Agathina. Ditto.
Tæniocampa munda and *miniosa*. Sallows, April.
Orthosia neglecta. On the flowers of heather (*Calluna vulgaris*), in August. It may be worth remarking that the majority of specimens found here are red; in the New Forest the red ones are rare.
Aplecta tincta. On the fence in the Addington-road, June.
Cucullia Asteris. Larvæ on *Solidago Virgaurea*, in August.
Geometra Papilionaria. On birch, July.
Alcis Roboraria. Trunks of oaks, June.
Melanippe hastata. Flying among underwood, June.
Bapta taminaria. Hedges, June.
Pachycnemia Hippocastanaria. On heath, April and August.
Pyrausta octomaculata. Flying, June.
Botys pandalis. Kicked up among underwood, June.
Madopa Salicalis. Once taken in May.
Hypenodes albistrigalis. July.
Nola cristalis and *strigulalis*. On trunks of oaks, June.
Penthina prælongana. Among underwood, May.
Sericoris decrepitana. Scotch firs, June.
Eriopsela quadrana. Among heath, May 28.
Phoxopteryx diminutana. Among sallows, July.
 „ *ramana*. Underwood, near poplars, June.
Grapholita cinerana, *Haw.* Poplars, June. Some collectors doubt if this be really a variety of *G. nisella*, *Linn.*, certainly I never took any but these gray ones here, and they abound. Seeing that many species of insects have *one* other so closely allied that it is difficult to separate them, it is possible there may be a dichotomy in this instance.
Palæodes immundana. On birches, April and August.
Pædisca occultana. On larches, July.
Heusimine fimbriana. Oaks, March and April.
Retinia Turionella. Among firs, May.
Carpocapsa splendana. Underwood, June.
Catoptria Albersana. Oaks, May.
Coclylis subroseana. Underwood, May.

- Pempelia Betulæ*. Oaks, July.
- Incurvaria Zinckenii*. Birches, May.
- Tinea melanella*. Larvæ on the fence in the Addington-road, near Shirley, where they feed on lichens.
- „ *bistrigella*. Mostly under fir-trees, June.
- „ *luzella*. One among willows, May.
- Micropteryx Mansuetella*. Among *Mercurialis perennis*, in under-wood, May.
- „ *Allionella*. One, flying.
- „ *rubrifasciella*. Trunks of beeches, May.
- „ *semipurpurella*. Birches, April.
- „ *unimaculella*. Birches, April; more common than the last species.
- Plutella antennella*. Underwood, September.
- Depressaria Ulicetella*. Furze, September.
- „ *assimilella*. Larvæ on broom, April.
- „ *Hypericella*. Larvæ on two species of *Hypericum*, in May and June.
- „ *intermediella*. Beaten from the thatch of an old shed, now extinct, in September.
- „ *ciliella*. Ditto.
- Gelechia velocella*. Heathfield, May 2nd.
- „ *diffinis*. Open spaces, May and August.
- „ *basaltinella*. Thatch, Addington, June.
- „ *pelicella*. Flying in an open space, August.
- „ *humeralis*. Beaten out, April and September.
- „ *alcella*. Trunks of oaks, May.
- „ *triparella*. Beaten out of oaks, June.
- „ *atrella*. Flying about heath, July.
- „ *immaculatella*, (*Ent. Trans. i. n. s. p. 67*). Flying, Aug.
- Æchmia fuscoviridella*. Swarms in May. This species appears quite unknown on the continent, common as it is here.
- „ *resplendella*, (*Sta. Cat. Supp. p. 6*). One taken by beating, in June.
- Argyresthia conjugella*. On mountain ash, June.
- Coleophora juncicolella*. Among rushes, June.
- „ *albitarsella*. Larvæ on ground ivy in the Addington-road, in April.
- Gracilaria auroguttella*. May and August; the larva feeds on *Hypericum*.

Gracilaria ocnestomella. May and June ; on *Echium vulgare*.

Coriscium sulphurellum. By beating, September, rare.

Cosmopteryx Pinicolella. Scotch firs, July.

Elachista gibbiferella. Birches, June.

„ *trapeziella*. June, (Zool. 2894).

„ *occultella*. Flying, (Zool. 2806).

„ *ochreella*. Flying, May.

Bucculatrix Demaryella. June.

Nepticula quinquella. Trunks of oaks, June.

„ *Septembrella*. September.

Lithocolletis Faginella. Trunks of beeches, May.

„ *Emberizipennella*. Honeysuckles, May.

In the sand-pits at Shirley, when I collected Coleoptera, I used to find many species, some in great abundance ; the wood also produces many beetles, but from the absence of old trees, timber-feeding ones are scarce.

J. W. DOUGLAS.

2, Eton Grove, Lee, Kent, June 5, 1851.

Description of the Larva of Limenitis Sibilla.—Believing the larva of *Limenitis Sibilla* to have been very rarely taken and almost unknown to entomologists, I beg to subjoin the following description of it, having taken seven on the honeysuckle in Black Park, on the 15th of June last. Length, 1 inch : colour, pea-green, darkest on the back, two lines on the side, one greenish white, the other brown : on the back there are eighteen spines, the first six being largest, about one line to the eighth of an inch long, and dark brown, the next eight are smaller and lighter in colour, the four last are the colour of the first, but rather shorter ; each spine is studded with many small points : on each side of each segment there is a bunch of short yellowish spines or bristles : head brown and covered with short white spines or tubercles. The chrysalis is angular, of a dark olive-green colour, with two horns and eight silver dots on the head, and a brown hatchet-shaped protuberance on the back of the abdomen, with a bright silver stripe on each side ; back of the abdomen light green, with two silver dots near the tail, and three in front : suspended by the tail. The first butterfly emerged on the 2nd of July.—*John Hunter ; 24, Bloomsbury Street, July 9, 1851.*

Note on Trycheris mediana.—This insect is to be met with in considerable abundance in a small wood on the Blythswood estate, adjoining this place. It sits upon the leaves and flowers of the hemlock, on which plant the larvæ probably feed. The best time for taking it is at mid-day, although a few stragglers may be found until late in the afternoon. I have met with a variety without the double spot, and the two single ones merely indicated by small dots.—*Angus Campbell ; Renfrew, July 8, 1851.*

Note on the Scarcity of Wasps.—I have to repeat the observation I made to you last month (Zool. 3164), respecting the scarcity of wasps ; it is very remarkable still. Probably some of your readers may notice if it be so in other neighbourhoods as well as this. This year I have not seen a single hornet in this locality up to this day, so that it appears likely we shall have few of them also. The cold ungenial weather is unfavourable to all the insect tribe, and there is every indication of a wet cold sum-

mer; a very tempestuous equinox and a dry May are often the forerunners of this sort of weather. The bees will have little time to lay up a store; but I must say I was surprised to see what progress Mr. Milton's had made at the Crystal Palace—it is quite astonishing. There must have been a stray honey-dew during the last fortnight in May and the first week in June.—*H. W. Newman; New House, Stroud, June 18, 1851.*

Extreme abundance of Asemum striatum.—In the August number of last year's 'Zoologist,' (Zool. 2885), this insect was noticed by me as having been taken around here in some plenty. Again this year I have met with it, and have had the satisfaction to take thirty specimens in three days. Its appearance is nearly three weeks later than on the former occasion, no doubt attributable to the severe weather which we have had around here, for until Thursday last nothing but cold winds and heavy rains prevailed; since then, however, summer has set in in all its glory. The insect would seem to have rushed into life *en masse*, and appear in ecstasies, flitting and dancing about in his rays who lights up the world with beatific splendour.—*John Scott; London Works, Renfrew, July 1, 1851.*

Capture of Peryphus maritimus at Ardrossan.—On the 21st of last month, having occasion to be at this place on business, and having a little spare time, I took a walk along the shore, where I picked up fifteen specimens of this beautiful little insect, chiefly from beneath sea-weed lying at high-water mark. As I am not aware of its having occurred in this part previously, other collectors who visit this watering-place, and are destitute of examples, I have no doubt might obtain the insect in such plenty as to be able, not only to fill their own void, but also to supply their friends.—*Id.*

Capture of Acalyptus Carpini (Hbst.) and Mecinus collaris (Germ.), two Curculios new to England.—Whilst beating the sallow-blossoms on the 28th of April last, in a small wood near Fenny Stratford, I was much pleased to find in my net a small and pretty Tychius-like Curculio which I did not recognize; and on my capturing several specimens, was quite satisfied it must be new, and through the kind assistance of Mr. Walton, who has received a specimen from Germar, have ascertained it to be the Acalyptus Carpini, *Hbst.* At first sight in the net it had somewhat the appearance of a Tychius, but it has the habit of a Dorytomus, and from its long rostrum and the position of the antennæ, resembles it; but its silky glossy elytra give it the appearance of belonging or being allied to the former genus, and in Schönherr it is placed between that genus and Sibinea. Four years ago, whilst sweeping below Gravesend, I took a Mecinus new to me, and this year, in May, met with another specimen near the same place, also by brushing, but could get no more by that means. I therefore set to work, knelt down, and examined the different plants carefully, and after about two hours' labour succeeded in finding the insect in tolerable plenty, at the roots and on the lower stems of Plantago maritima, which abounds there. In two visits, with the assistance of some boys, I took about forty specimens; it proves to be the Mecinus collaris of Germar. In company with it I found Baris atriplicis, Notaris bimaculatus, and other species rarely met with by sweeping; and I feel convinced many novelties will turn up, if entomologists will examine carefully all the local and rare plants they meet with.—*Samuel Stevens; 24, Bloomsbury Street, July 9, 1851.*

Early appearance of Colias Edusa.—On the 29th of last month (June), whilst travelling on the North Kent line, near Higham, a fine fresh male Colias Edusa flew along the bank, and kept pace with the train for some time; and I also observed that there and near Sheerness Cynthia Cardui was this year very abundant, and most certainly the commonest butterfly on the wing.—*Id.*

Shower of Snails.—The notice of this “extraordinary scene” in your last number (Zool. 3176), induces me to offer to the pages of that useful periodical some observations on a similar phenomenon noticed in the neighbourhood of Bristol many years ago, and reported and commented on in the newspapers of the day. Although I cannot answer all the amusing and pointed questions of Mr. Douglas, I think the following will throw some light on the recent phenomenon, “the shower of snails which was witnessed at Bradford about twelve miles from Bristol.” In the summer of 1821, the Bristol newspaper, *Felix Farley*, published “an account of a wonderful quantity of snail-shells found in a piece of land of several acres near Bristol, that common report says fell in a shower.” This shell-storm attracting much attention at the time, I wrote to my now long departed friend, J. S. Miller, the then Curator of the Bristol Institution, and asked him a few questions on the subject. The following is extracted from Mr. Miller’s reply to my questions, and will serve to show that a snail-shower has engaged the attention of a naturalist. It bears date Bristol, — 2nd, 1821.— “The periwinkles are indeed wonderful. They descended in a heavy rain-like shower on the field of Mr. Peach, as a due punishment for his disrespect to the virtues of our late Queen. The shower was so intense, that the umbrella of an old lady passing by was broken to pieces, and the fragments lifted in the air by the whirlwind which picked up all the periwinkles on the neighbouring hills, and dropped them three inches thick on Mr. Peach’s field. You know the story of ‘The Three Black Crows;’ and thus the whole is reduced to no periwinkle-rain, no whirlwind, and turns out to be our old friend *Helix virgata*, making its annual pilgrimage in search of a mate, and occurred one in almost every square inch in the field in question.”—*Wm. Baker; Bridgwater, July 7, 1851.*

Notes on Observations in Natural History during a Tour in Norway.

By the Rev. ALFRED CHARLES SMITH, M.A.

(Continued from page 3170).

THE Bear, (*Ursus arctos*). This is the great terror of the Norwegian farmer; his enormous strength, undaunted courage and terrible fierceness when provoked, render him a foe which they shrink from attacking unless in considerable numbers and well armed; and yet which thins their sheep-folds and herds of cows year after year. His attacks, too, are not confined to the colder season of the year, when starvation renders even the cowardly wolf bold; indeed, in the depth of winter, the bear is snugly ensconced in his winter quarters, a den formed under some projecting bank, or fallen tree, or cave in a rock, and well covered in with a canopy of snow; and there he sleeps for months, and dreams of the havoc he had committed and the victims he will sacrifice when he wakes again: but in the very middle of summer the bear will descend the mountain, and seize a cow, and make his feast, not at all daunted by the daylight or the vicinity of houses, or scared away by the bellowings of his victim.

I saw this fully exemplified on one occasion, and as it was the only opportunity I had for joining in a bear-hunt, though it proved unsuccessful, I will describe the whole affair. It was in the famous valley of Jüstedal, whither we had made an expedition of three days to see the largest and finest glacier in Norway, and other grand scenery in this wild and retired spot. Our party consisted of four persons, three being English, and the fourth my inseparable companion and fellow-hunter, the Norwegian officer, of whom I have had occasion to speak before, mounted on clever Norwegian ponies which we had hired at Lyster, and attended by four men, bearing our provision-boxes and blankets; the Captain and I armed with our guns and other hunting-gear, and our companions with their sketching-apparatus. We left the beautiful Lyster Fjord on one of the most lovely evenings in July, and at 8 P. M. commenced our march in single file up the mountain side. I omit the particulars of our night journey, how the mountain ponies scrambled up the steep rocks, and down the most frightful stairs of stone, where one false step would have hurried them and their riders to destruction; or how we bivouaced several times, and lit a fire, and cooked our coffee in the invaluable camp-kettle; or how we admired the splendid scenery of these mountain-passes: suffice it that at 7 A. M. of the following morning we rode into the court-yard of the Preestegaard (or parsonage-house) of Jüstedal, the only house of any size in the whole valley, and begged hospitality (or rather an asylum as head-quarters) for a few days. This was at once most courteously accorded; although our party was certainly rather a formidable one to demand food and lodging of a poor Preesten, whose income amounts only to about £30 a-year; for we numbered in all seventeen living beings, ourselves, and servants, and ponies (three of which had foals running by their sides), and two hounds belonging to the Captain.

In the evening of that day the Captain and I again ordered our horses (for we preferred travelling by night), and winding up the valley made an excursion to the great glacier, whither our companions had gone with their sketch-books many hours before, nor did we return to the Preestegaard until the next morning at 8 A. M. On our arrival there we found the whole village in great commotion, groups of men and women, with consternation on their faces, standing in the yard of the Preestegaard, and we soon learned that in the night a bear had come down from the mountains, and had killed one of our host's cows near the foot of the mountain, within half an English mile of his house. The villagers had heard the bellowings of the poor cow at about 11 P. M. on the preceding evening, and had guessed the cause;

but not possessing any fire-arms, and having a very excusable dread of a hand-to-hand encounter with a bear, did not dare go to the rescue. Such an opportunity for hunting a bear, and at the same time for trying to repay the hospitality of the Preesten by ridding him of his formidable and destructive neighbour, was not to be lost; so we postponed our departure till the next day, and resolved to hunt the bear that night. Accordingly the Captain sent off his man, Ole (also an old soldier), to make preparations, and to scour the country for rifles; and I sent off to the glacier, that our companions, who were still lingering there, might hasten to rejoin us and partake in the hunt. Then we went up the mountain, to see the scene of the slaughter and the remains of the cow. We found her amongst some thick bushes and underwood: she was a large cow for Norway (where all the animals are very diminutive), and had been dragged some distance from the place where she was killed, as was evident from the blood, the trampling of the grass, and the footmarks all around. The spot, too, where she was first seized was clearly seen, and so was the place of her death and of the bear's repast, from the pools of blood on the grass. The trampling of the ground all about, and the broken branches of the underwood, and the *spoor* (as the South-African hunter would call it) of the bear and of the cow, showed how severe had been the struggle. The bear had eaten a great part of the neck of the cow, and also her udder, and then had dragged the carcass into the bushes where we found it, and which he had constituted as his temporary larder.

Now began a consultation as to how we should proceed in the hunt. There were two plans before us: one, and that the most certain of success, to lie in ambush not far from the remains of the cow, and to fire upon the bear when he arrived again, which he would most undoubtedly do for his next meal; but then, as he had just made so good a supper, we should probably have to wait there two or three nights and days, and that did not at all suit our plans or our inclinations: so we resolved on the second course, which, though far more doubtful of success, gave us a good chance, namely, to station ourselves singly at certain places on the edge of a torrent which thundered down the mountain, where lodgments of snow had formed natural bridges across the roaring water, and for one of which the bear would probably make, when the mountain, in which it was agreed he must still be concealed, was driven by the inhabitants of the village. We accordingly proceeded to carry out this plan; and Ole having returned in the course of the afternoon with a couple of very primitive rifles, the stocks of which were painted sky-blue and edged with yellow; and

being also accompanied by a mountain hunter, whom he had met and easily induced to join our forces ; and our companions having arrived from the glacier, we prepared to start for the scene of action just as it was getting dusk, at about 9, P. M. Two of our party were armed with rifles, the two others with double-barrelled guns, while sundry hunting-knives stuck in our belts and pistols in our pockets completed our arms. We soon reached the torrent whose banks we intended to guard, and whose waters came roaring and foaming down the steep mountain-side in an almost continuous cataract from the snows above. At the first snow-drift, which falling in an avalanche in the spring into some deeper hollow, had remained unmelted, and formed a natural bridge over the rushing waters, was stationed one of our party : another was planted some hundred yards higher up : at the third suitable position I was placed ; the Captain taking up his position some distance above me : and the old huntsman who had joined us mounting to the outskirts of the underwood, which clothed the lower face of the mountain-side and concealed the bear. Amongst us we must have covered a good mile of the torrent. Meanwhile all the men and boys of the village had started some hours before to the other side of the mountain, where forming a long line, and with shouts and halloos and much firing of a pistol which we had lent them for the purpose, they advanced gradually towards us, scaring the ptarmigan and all the feathered and furred denizens of the mountain by the unwonted noise, and endeavouring to drive the bear towards the torrent where we were concealed.

At this time we were snugly ensconced each in his retreat, prepared to oppose the passage of the bear, should he venture to cross the snow near which we were placed. Our instructions, given by the mountain hunter and translated by the Captain, were that we should lie perfectly still and watch for the bear : should he come towards us, we were to wait until he was within thirty or forty yards, then halloo to him, at which he would stop and stand up on his hind legs to listen and inquire the cause of this interruption to his progress ; at which moment we should have a famous opportunity for a shot. At the report of a rifle or gun, we were all to hurry to the spot as soon as possible ; though the distance at which we were from one another, and the excessive steepness of the mountain, would have made this plan of little use had the bear come near either of us, as the conflict must have been decided one way or the other long before that. The old huntsman of the mountains ended his harangue by impressing upon us the

necessity of a sure aim, as he very coolly and laconically remarked, if we did not kill the bear, the bear would certainly kill us.

Behold us then, each in his place of ambush, well hidden with bushes, and shrubs, and long grass and broken rocks, awaiting the approach of Bruin. The snow by which I was lying was marked in all directions by the frequent track of bears, showing that here they were in the habit of crossing the torrent. Above and below me the torrent roared down the mountain-side; and for some distance its banks were bare of bushes, so that I could see well if the bear came towards the snow. A large thick branch in front served as a steady rest for my rifle; and my position seemed most favourable both for concealment and for sport. My hunting-knife was stuck in the snow before me, ready for instant use; my pistol ready cocked on a rock close at hand; some fresh powder placed in the pan of my rifle (a flint one); and then nothing remained to be done but to lie quiet and to wait. And so I waited, hour after hour, until my patience was nearly exhausted, and I began to think that the chance of a shot at a bear, and the almost equal chance of becoming a prey to one, were rather dearly bought at the expense of lying out for a night under the snow, especially when the ground and bushes were soaked with rain, which had fallen very heavily all the preceding day, and I was wet to the skin. So the hours passed by slowly enough, and notwithstanding the excitement of expecting the bear, it was certainly dull work in which to be engaged alone during the night. Keeping as good a look-out as the darkness would allow (for the night was cloudy, and the summer being now far advanced, the nights were not so bright as before); — now peering along the snow, which extended above me for nearly a hundred yards, now narrowly scanning every stone upon the opposite bank of the torrent; — now trying to penetrate with my eyes the gloom of the bushes and rocks before me; — I began to get very weary of my solitary watch, and was not sorry to hear the voices of the beaters, as at first very faintly and far off, and soon nearer and louder, they broke upon my ear: then a loud report was heard, which caused me to start to my feet and seize my rifle; ready to rush down the mountain towards the supposed scene of strife; but a moment's reflection convinced me it was not the report of a gun, but of the pistol with which we had provided the beaters.

Soon after this, and when I was now quite stiff with cold and lying so many hours on the wet ground, a shout from the Captain and the huntsman brought me across the snow, and we proceeded to descend the mountain, as the drivers had done their work, and the bear had

not appeared to them or to us. When however we joined our companions lower down, we learned that one of them had seen the bear, and the other had heard him. It appeared that Master Bruin had advanced slowly and cautiously towards the torrent, within sight of one of our party, who was some two hundred yards above him; and being armed only with a double-barrelled gun, he of course did not shoot at that distance. He described the approach of the bear as most cautious, with his nose close to the ground, sniffing every breath and smelling every shrub, and creeping along like a mouse, he advanced straight in the direction of the torrent where the first of our ambush was placed below the snow, and who heard him crashing in the branches above, and expected him every moment: he must have been within fifteen yards of him at that time; apparently however the bear smelled an enemy, for again was he seen to retreat and go up the torrent, lifting his huge yellow body over the great masses of rock that were strewn in his way, and pulling himself up by his strong fore-legs. Whether he threaded his way among the beaters back into the mountain, or whether he contrived to cross the torrent at some other point which was unguarded, I cannot tell; he did not appear again: and so ended the memorable night of the bear-hunt in the mountains of Jüstedal.

Since writing the above I have just received a letter from my friend the Norwegian officer, who tells me he returned late in the autumn to the scene of our bear-hunt in Jüstedal, and with the help of a peasant succeeded in killing the monster. He proved to be a very fine bear, and the Captain describes his skin as magnificent.

Bears seem to have been most unusually abundant in Norway last year. While staying at the little station of Ormen, in the glorious Romsdal, for five days, no less than four cows, belonging to the people there, were attacked by bears in that time. Two of these were killed, and I saw the remains of their carcasses brought down from the mountains into the village on sledges: one of the others, which was badly wounded, belonged to the landlord of our inn, and consequently I saw her wounds dressed every day: they were frightful wounds, and those made by the claws of the bear seemed when probed to be four or five inches deep. The other cow, which was also badly wounded, I did not see. We heard, too, whilst in this Romsdal, that three bears had been seen by a peasant one evening, marching up the valley near Veblungsnes; but so extensive and wide are the mountains, so endless the forests, and so steep and inaccessible except for bears are some of the rocks, that it was thought perfectly useless to

attempt a hunt : and so the poor farmers must suffer the loss of their cows and sheep, and only trust to scare away their blood-thirsty enemies by the large fires which they find it necessary in many places to burn at night round the sheep-folds and herds in the mountains.

The great strength of the bear is what renders him so formidable. He has been known to descend into a cow-shed by a large hole in the roof, and to carry off a struggling bellowing cow in his arms through the same hole. He has been known to scalp a man, and even to crush in his skull, by a pat from his paw. And only two years since, Mr. Lloyd (the great hunter of the North) was almost killed by a stroke of a wounded bear's paw. Mr. Lloyd had wounded the bear, which immediately turned upon him, and dodged him round and round a tree, behind which he ran for refuge : and though his companion lost no time in coming to his rescue, and by a well-aimed shot laid the bear dead at his feet, it was not until he had with his fore-paw struck at Mr. Lloyd, and torn all the skin off his face. This is another narrow escape that great hunter has had from the bears of Scandinavia.

ALFRED CHARLES SMITH.

Old Park, Devizes, July 3, 1851.

(To be continued).

Proposal for a Great City Conservatory, or Geographical, Perennial, Glazed Garden, on the site of Smithfield Market. By
EDWARD NEWMAN.

NOTE.—*The following Paper was written for the 'Phytologist,' but it is so strictly in accordance with the object of the 'Zoologist,' the diffusion of a love of Natural History, and the extension of the means for indulging that love, that I trust it will not be otherwise than acceptable to a great majority of my readers.*

—E. N.

SMITHFIELD Market, heretofore the monster nuisance, I might perhaps even say the monster curse, of this great metropolis, is to be removed : the House of Commons has decided on its fall. While the question of its existence was under discussion, I would not weaken the hands of those who had so long and so worthily laboured for its removal, by introducing any minor plea—any less powerful argument than that on which they took their stand. The nuisance was unrivalled in the history of nations ; it was intolerable, and therefore must be removed. No ulterior consideration could add to the strength of this position ; in fact, every scheme for the occupation of the site

was liable to be met by the objection, — “You have, then, an ulterior object.” This has been avoided: the question has been discussed on its own merits, and is decided. The occupation of the vacant site has therefore become a subject fairly open to consideration.

It will immediately occur to those who, from motives of philanthropy, have uniformly advocated the retaining of open spaces, or, as it were, breathing-holes, here and there throughout the metropolis, that another of these is now jeopardized. Such a vast area will not long remain unappropriated. The idea which I have formed on the subject, and which I am glad to find meets with general approbation amongst those to whom I have mentioned it, is to construct, on the site of the Augean stable, which a strength greater than that of Hercules is on the eve of cleansing, a geographical, perennial, glazed garden, in which shall be exhibited, in a growing state, in all their native luxuriance and beauty, the vegetable productions of the entire world. I introduce the term ‘perennial’ advisedly. The term ‘winter’ garden, so generally employed, seems to imply that it is designed to be a winter resort exclusively. Such an idea is erroneous; the term simply meaning that such a garden is to be enjoyed in winter as well as in summer: no one ever thought of restricting the use of winter gardens to the season whence their name is derived. Those citizens of London who have visited the great conservatories at Kew, Regent’s Park, Sion House, &c., must be fully aware of the advantages of having such a building in the centre of the metropolis. These may be briefly enumerated under six heads:—1st, health; 2nd, comfort; 3rd, safety; 4th, instruction; 5th amusement; 6th, accessibility.

1st. *Health*.—There is no question whatever that the health of Londoners suffers from continually and habitually staying indoors. No one, not even nursemaids and children, can go out to enjoy air which, in our crowded streets, impregnated abundantly with particles of soot and dust, and with the fumes of beer, gin, and tobacco, is not to be enjoyed. The student, the clerk, the schoolboy, the wife, the child, cannot seek the streets as a temporary relaxation or change — cannot expect to find in them even a momentary invigoration; whereas a glazed garden would supply the desideratum, oxygen. That pabulum of animal life is abundantly exhaled by plants during the day; and not only would the invigorating effects be felt within, but they would extend, though in a minor degree, all around. The consumption of oxygen, and its consequent abstraction from atmospheric air, is the main cause of that oppressive feeling which so continually produces fainting, sickness, and all kinds of illness in omnibuses, theatres, and

fashionable places of worship. The glazing would serve to arrest the escape of this life-giving principle, not *prevent* but *arrest* it, and the invigorating effect of entering the building would be at once manifest. The advantage of such buildings to invalids, especially in cases of incipient phthisis, is a matter now becoming notorious, through the recently-published views of Mr. Paxton and others; but I do not see that any of these gentlemen make the acknowledgment which common courtesy requires to Mr. Ward, with whom the idea originated. In order to set that gentleman right with the public, I beg to refer the reader to his work, published nine years ago.* After describing fully the advantage of such closed glass houses as that I am now proposing to erect, Mr. Ward goes on to consider the application of the same principle to animal and human life,—an application which he justly regards as of far higher importance than the scientific, amusing, or ornamental purposes to which the Wardian cases are now generally applied. “With respect to consumption, could we have such a place of refuge as I believe one of these closed houses would prove to be, we should then be no longer under the painful necessity of sending a beloved relative to a distant land for the remote chance of recovery, or too probably to realize the painful description of Blackwood—‘Far away from home, with strangers around him,—a language he does not understand,—doctors in whom he has no confidence,—scenery he is too ill to admire,—religious comforters in whom he has no faith,—with a deep and every day more vivid recollection of domestic scenes,—heart-broken,—home-sick,—friendless and uncared for,—he dies.’”

2nd. *Comfort*.—The great discomforts of out-of-doors life in London, arise from cold winds, rain, intense sunshine, dust, soot, filthy smells, wet muddy ground, incessant noise, &c. Now one and all of these disagreeables would be excluded from a glazed garden: cold winds, rain, dust, soot, smells, and noise would of necessity be shut out. The roof of green and corrugated glass would effectually obstruct all disagreeable effects from the sun’s rays, which, transmitted through such a medium, would not injure the most delicately-sensitive skin; and such glass, unlike all other kinds, would diminish instead of increasing the temperature. The walks, made entirely of comminuted shells, would be always dry, yet never dusty—always fit for the thinnest sole to traverse with impunity and cleanliness.

3rd. *Safety*.—There can be no doubt that a ramble in the streets

* ‘On the Growth of Plants in Closely-glazed Cases. By N. B. Ward. London: Van Voorst. 1842.’

of London is attended with great danger, and the danger, if not positively so frequent as is supposed, is still a sore trial, even in anticipation. It is but lately an infuriated bullock threw an elderly female into a two-pair window; the shaft of a furiously-driven cab has passed through the body of a man; the brains of a child have been scattered about the street by the wheels of an omnibus. Such cases as these may be rare, but broken arms and legs, from falls occasioned by compulsory contact with horses and carriages, are innumerable; and let it not be supposed the victims are the only sufferers: thousands of timid people have fled in terror from racing omnibuses and goaded cows, and although their bodies may have escaped scatheless, their minds have suffered a deep and lasting injury. From a glazed garden all such perils and thoughts of perils are absent.

4th. *Instruction*.—Such a garden might be made the means of complete instruction in botany. Is it not a part of every medical education that the pupil shall possess a competent knowledge of structural and systematic botany? In order to perfect him in the study, he is now taken to Kew, to Chelsea, to Regent's Park, or he is whisked by some railway far into the country, on the remote chance of finding the specimens in their native habitats, causing a loss of time, labour, and money that has been considered a great grievance to many young men with whom I have conversed. Here the information would be brought to him, not he to the information. Here would be a lecture-room among the objects themselves,—a lecture-room open to every professor or lecturer, on the sole condition that all within the walls at the moment should be at liberty to attend. Here the student of British botany should find living specimens of all our native plants; should have every facility allowed him to examine, dissect, and compare them. Here a committee should be formed, with the duty of alternately attending to give instructions to every inquirer; of pointing out the plants whose various parts serve as articles of food, clothing, or medicine; of exhibiting them in a manufactured as well as growing state; and of explaining by what process they are prepared for use. And not only should this committee exercise its function of tuition: every botanist, known to be such, as the subscriber to a society, or the contributor to a journal, or the curator of a garden, or the holder of any title whatever to the office of teacher, should be always at liberty to illustrate his views by the living objects before him. A knowledge of ethnology and geography could also be acquired.

5th. *Amusement*.—Simply considered as a place of amusement,—a place where the seekers of pleasure might continually meet their friends, might exhibit their best dresses, lounge on the softest ottomans, listen to the best music, enjoy the scent of the sweetest and the sight of the loveliest flowers, and the shade of loaded orange-trees and of graceful palm-trees; might do all this without the usual inconvenience of late hours, heated rooms, vitiated atmosphere, certain headaches, and that dreadful feeling of *ennui* and lassitude which nocturnal revels and dissipation inevitably bring,—surely this is something to achieve. Say it is idle and frivolous, it is still the substitution of a healthful and invigorating for an unhealthy and debilitating frivolity, and this is no despicable change; indeed, I feel convinced that the right-minded will consider it exactly the reverse. Let those who will, enter the list against frivolity: I decline so Quixotic an attempt. But make frivolity beneficial, and you accomplish a very reasonable object. I would have a band, the best that could be procured, to play for two hours every Saturday afternoon during the winter and spring months, omitting only those months when the band plays in the gardens of the Zoological Society. I would on no account interfere with the prior claim of that admirable institution. By this arrangement, the company who frequented the out-of-door promenade in Regent's Park during the summer, would have the opportunity of attending the indoors garden during the winter.

6th. *Accessibility*.—Whoever will take the trouble to examine a map of London, will find that West Smithfield occupies the exact geographical centre. It is therefore equally accessible to all. Let us compare this with the situation of the Crystal Palace at Kensington, which it is proposed to convert into a vast conservatory or winter garden, open alike to pedestrians and equestrians. From the Post Office or St. Paul's it takes the traveller sixty-five minutes to reach the Crystal Palace, sixty-five minutes to return, and costs him one shilling; from the Town Hall in the Borough, the India House, or Finsbury Square, the time occupied is full ten minutes more, or seventy-five minutes in all. All these spots are in the great thoroughfares. From any less frequented part the time would be greater. Two hours and a half may be taken as a fair average of the time occupied in passing to and from a Hyde-Park conservatory; the time occupied in passing to and from the Smithfield glazed garden from the same localities, would average twenty-six minutes, supposing the visitor to walk; twenty minutes, supposing him to patronize an omnibus; sixteen minutes, supposing him to indulge in a cab. An average of two

hours' difference would occur in each journey from the most distant parts of the city to either locality, but for residents near Smithfield the difference would be far greater. Again, from Holborn there would be a vast saving of time, so also from Blackfriars' and Southwark Bridges, so also from the densely-peopled regions of St. John's Street, and so also of the entire east: indeed, it is beyond a question that, to upwards of a million of the inhabitants of London, every visit to the city glazed garden would occupy two hours less than a visit to the Hyde-Park conservatory. But this *primâ facie* saving of time and money is not all: whoever spent two hours in transit would think the time sadly wasted unless he spent four hours there, so that a day would be occupied; and in fact a visit to a Hyde-Park conservatory must, like a visit to the Great Exhibition, be a special holiday; so also whoever spent twenty minutes in transit to and from the Smithfield glazed garden would think it time wasted unless he could spend forty minutes there; thus an hour would be consumed, but no more. This would readily be afforded. Again, although time is money, yet money is money still more emphatically; the city visitors to a Hyde-Park conservatory must lay out one shilling in transit, and they must almost of necessity lay out one shilling and sixpence each in refreshments; that is the most moderate computation: the visitor to the Smithfield glazed garden would not *necessarily* incur either expense.

A few observations may be added under the heads of 'plan,' 'funds,' and 'alternative.'

Plan.—I think the roads now passing through Smithfield might be made to divide the area into six principal compartments. These I would call Europe, Asia, Africa, N. America, S. America, and New Holland. In each division I would endeavour to place the vegetable productions which are natives of the soil, and in all instances imitate as nearly as possible the natural conditions of the plants themselves; and each geographical district should be further illustrated by stuffed specimens of the quadrupeds, birds, and reptiles for which it is most remarkable; Asia by its camels, elephants, and tigers; New Holland, its cassowary, emu, and kangaroos; Africa, its giraffe, elephant, hippopotamus, lion, ostrich, and crocodiles; North America, its bison, beaver, and alligators; South America, its llama, alpaca, vicuna, and its humming-birds; Europe, its wolves, elks, and aurochs. The specimens in all instances should be the best that could be procured, regardless of cost, and should be placed amid the scenery where they once enjoyed life. The stuffing or preservation of animals is an art that has now reached something like perfection, and I would have no creature set

up for exhibition unless approved by some competent naturalist. In the centre of each compartment should be a model of the continent whose productions it exhibited, its ascertained mountains, its rivers, seas, &c., displayed in their exact proportionate height, situation, course, length, &c.; and the unknown parts, as the interior of Africa, Australia, China, &c., left a perfect blank, not thickly sown with supposititious cities, as we too frequently see them in our maps. These models should be constructed only under the superintendence of men of the highest attainments, the cost being a matter of no comparative importance, and not to be weighed for an instant against accuracy. At each of these models a demonstrator should be stationed, thoroughly qualified to give explanations, and he should hourly give such explanations unasked, in the most simple, intelligible, and unassuming manner, carefully pointing with a light wand to the part to which he was alluding. If a plant or animal of interest was peculiar to either continent, of which there are numerous instances, he should be able to point out in what particular locality it occurred, and every other fact of importance connected with its history. Thus, if asked what species of monkey was found in Europe, and where, he should be able to name the *Macacus Inuus*; to point at once to the rock of Gibraltar; and to state that this ape abounded there, feeding chiefly on the young leaves and tender shoots of the dwarf palm (*Chamærops humilis*). The plan of structure, and of connecting the various continents, need scarcely be discussed, but between continents which are connected only by water the mode of transmission should represent a ship's deck, and those which join should be united by dry land. Each continent should be further illustrated by some of its aboriginal inhabitants, in the ordinary dress of their respective countries. I imagine there would be no difficulty in procuring the Negro, the Hindoo, the Australian, the Red Indian, or the Indian of the Pampas. This idea has been already pictorially carried out in the 'Physical Atlas,' but only the very rich can see that beautiful work: this practical illustration of the idea every one should and every one would see.

Funds.—The difficulty of raising funds always stares one in the face on occasions of this kind; but it is scarcely within the scope of this preliminary notice to go into financial details. It is found possible to obtain an income of £14,000 a year for the maintenance of the gardens of the Zoological Society, in Regent's Park, at a distance of five miles from the centre of the metropolis, and presenting the single attraction of living animals; and the great secret of this income appears to lie in the judiciously-liberal expenditure. The Crystal

Palace is a still more striking instance of the success of liberality. Nothing but what I would call the judiciously-liberal expenditure could have brought the prodigious income that has been received. So, in the present instance, everything should be conducted on the most liberal scale. The choicest and most beautiful exotics, the most graceful statues, the best botanical nomenclature, should be found wherever required. The sum for the principal and first outlay must be borrowed, and government, once aware of the practicability of the scheme, would doubtless be willing to advance it. The interest on this, the ground-rent, and the cost of maintenance would be the three items of current expenditure.

I would propose having a graduated scale of subscribers and contributors.

1st. A subscriber of £10 a year should admit whom he liked and when he liked.

2nd. A subscriber of £5 a year should admit five persons on any day or every day; of £4, four persons; of £3, three persons; of £2, two persons; of £1, one person. Such introductions should be either by filling up a printed form or personally.

3rd. A subscriber of 10s. a year should admit personally his wife and children, but should give no orders.

Non-subscribers should be admitted on the following terms:—

Acknowledged botanical authors, editors of literary journals, botanical lecturers, and students of medicine with certificates of attending botanical lectures, at all times gratis.

Children in non-paying schools, introduced by a subscriber, and under suitable superintendence, gratis on Mondays and Thursdays. Children in paying schools, under similar restriction, one penny each on Tuesdays and Fridays.

Other persons should pay—

3d. Monday and Thursday.

6d. Tuesday and Friday.

1s. Wednesday and Saturday.

No money taken on Sundays, and no refreshments to be sold; no wine, beer, spirits, or tobacco to be sold or allowed at any time within the garden; and the ordinary attractions of tea-gardens, as balloons, fireworks, burning cities, volcanoes, &c., should on no account whatever be introduced.

Alternative.—It is quite certain the site of Smithfield will be occupied. If its occupation be not as proposed, it will probably be

covered with noxious factories or dense rows of an inferior kind of houses. No one will build good houses there, simply because in such a situation they would not pay. Thus the mass of brick and mortar would become yet more prodigious, the locality still more confined, the atmosphere still more unwholesome, the neighbourhood, if possible, still more degraded. On the other hand, this vast garden, frequented as it would be by a superior class of people, would improve the condition of the neighbourhood; gin-shops and beer-shops and thieves' kitchens, all of which may now be said to have their metropolis in the Smithfield district, would disappear, and the neighbourhood would improve until it became on a level with other parts of the metropolis. Support therefore may be expected from all the better class of inhabitants; they will welcome the new comer, and bid *bon voyage* to the departing disreputable dependents on drunkenness, filth, and theft.

Objections.—The first objection, and the only one that can be made by the public, is this,—“Your scheme is very fine on paper, but it can't be carried out: no plants would grow in such an atmosphere.” Leaving the ulterior difficulties of obtaining the site and the money open for future consideration, I will address myself solely to the practicability of growing plants on such a site. I, then, unhesitatingly pronounce that I would grow the most delicate plants without any difficulty in the centre of Smithfield Market, amidst all its filth and traffic, with the assistance of glass only. The most delicate and tender plant with which I am acquainted grew luxuriantly for four years in the room in which I am now writing, in a dark, narrow, close, and dirty street in one of the worst localities in London. But I am well aware that a projector is too ready to paint everything *couleur de rose*, and therefore I have fortified my cause with the highest opinion obtainable on such a subject, that of Mr. Ward, so well known as the inventor of the method of growing plants in closed cases, and who succeeded so wonderfully at his late residence in Wellclose Square. Here is Mr. Ward's reply to my inquiry, accompanying a proof of the foregoing, as to whether the locality presented any obstacle to my plan:—

“My dear Mr. Newman,—I received with much pleasure your note respecting your intended plan of converting one of the greatest nuisances of London into a closed garden, a regular oasis in the desert. It would be difficult to point out any situation where such a scheme would be of so much utility as on the site you have chosen. I cannot

better answer your inquiries respecting the growth of plants in such a situation, than by stating what, after more than twenty years' experience, I conceive may be effected in a closed case *in the worst possible locality*. Old and hackneyed as the subject has now become, I will give you, as briefly as possible, the results of my experiments. Having tried in vain to grow plants in my former residence, in one of the most smoky parts of the metropolis, I was led by accident to make experiments on their growth in closely-glazed cases, and was delighted to find all my endeavours crowned with success. One of the first practical applications of my plan, was the conveyance of plants to and from distant countries. It would be fruitless to enter into any detail of the hundreds of experiments made with reference to this point. One example will suffice. The Horticultural Society were so convinced of the efficacy of this new plan, that they sent out Mr. Fortune to China with a number of closed cases; and they were not disappointed in their expectation. Whereas in the old mode of conveyance one plant only in a thousand survived the voyage from China to England, two hundred and fifteen out of two hundred and fifty arrived in perfect health by the new method. At present the plan is universally adopted throughout the whole civilized world, and all kinds of plants can be grown *in any locality whatever*, provided due attention be paid to their natural conditions, with respect to solar light and temperature. It must likewise be borne in mind that, owing to the quiet condition of the atmosphere in the closed cases, plants, like man, will bear variations of temperature, which in open exposure would prove injurious and even fatal to them. Hence it follows, that numbers of plants belonging to more southern climes will pass through our winters with impunity when surrounded by glass.

“Believe me to remain, very sincerely, yours,

“N. B. WARD.

“Clapham Rise, July 9, 1851.”

P.S.—While a proof of the foregoing was in my hands, Mr. Paxton's petition to the House of Lords, for the conversion of the Crystal Palace into a conservatory, was published in the 'Times' (July 12); and as this petition comprises all that has been previously said on the subject, I think that in fairness it should be appended to my proposition. Freely admitting as I do the very taking character of Mr. Paxton's proposition, it will still be observed that his scheme is open to reasonable objection, on the following grounds:—

1st. It would be a positive breach of contract, the building having been erected on its present site on the express condition that it should be removed by a certain day, and the park restored to the public use.

2nd. It would be a breach of faith with the subscribers who gave £70,000 for a specific object, totally different from the proposed application.

3rd. That the inhabitants of the parks have already access to the great conservatory of the Royal Botanic Society, to Kensington Gardens, &c., and strenuously oppose the proposed plan for making the Crystal Palace permanent; whereas every respectable inhabitant in the vicinity of Smithfield would desire a garden on that site.

4th. That to nine-tenths of the metropolis it would be useless from its distance.

Mr. Paxton's Petition.

“To the Right Hon. the Lords Spiritual and Temporal in Parliament assembled—

“The humble petition of Joseph Paxton, of Chatsworth,

“Showeth,—That the building for the Exhibition of the Works of Industry of all Nations, erected after the design of your petitioner, would, after the Exhibition is closed, supply a great public want which London, with its two and a half millions of inhabitants, stands most essentially in need of—namely, a winter park and garden under glass.

“That when your petitioner sent in a design for the Glass Palace, he had in view quite as much the after purpose for which the building could be adapted as the object then more immediately required.

“That your petitioner respectfully calls the attention of your right hon. House to the fact that within the last twenty years the physiology, economy, and requirements of animated Nature, with the effects which climate, locality, and various contingencies have upon its health and habits, have been studied and examined with the best results.

“That by the aid of chemistry and botany many useful discoveries have been made which practical horticulture has rendered subservient to the comforts and happiness of man, and that the removal of the duty on glass has given great impetus to this science; indeed, had that duty still existed, no such building could possibly have been erected.

“That the achievements of horticulture lead onwards to the forma-

tion of climates, which even under opposite influences are rendered healthy and suited to the wants and requirements of man.

“That formerly, wherever plants were congregated beneath a glass structure, the atmosphere was invariably deteriorated and rendered unfit for being more than transiently inhaled, the usual method with visitors being to take a hurried view of the chief beauties within, and then retire to a more genial air.

“That now plant structures are now no longer unhealthy, pent-up ovens, and that the objects within them grow with ease and natural vigour.

“That the ventilation and climate of our dwelling-houses have also been considered, and many additions to our comfort have in this respect been made. The perfection of these internal arrangements, contrasted with the atmosphere without, renders it still more desirable that something on a large scale should be done to counteract the effects of the outer air, which in this country, and in the neighbourhood of London especially, is often during many months of the year impure, murky, and unfit for healthy recreation and enjoyment; and it is to meet this want that your petitioner offers the present recommendation to the consideration of your right hon. House.

“That all structures hitherto erected, however great and noble some of them are, fall far short of answering this end, and that your petitioner respectfully recommends the Crystal Palace as being, in its dimensions, the best adapted for such a purpose of anything that has been hitherto attempted, and that its great advantages should be used for the public benefit.

“That the Crystal Palace, if properly laid out, will open a wide field of intellectual and healthful enjoyments, and will likewise stimulate the wealthy in large manufacturing towns to a similar adoption of what may now be raised so cheaply; and when judiciously furnished with vegetation, ornamented with sculpture and fountains, and illustrated with the beautiful works of Nature, would be pure, elevating, and beneficial in its influences on the national character.

“That at present England furnishes no such place of public resort; for although Kew has a splendid palm-house, where daily are congregated a great number of individuals, yet its warm and humid atmosphere is only calculated to admit of visitors taking a hasty view of the wonders of the tropics, as they pass in their walks through the gardens. On the contrary, in the Winter Park and Garden your petitioner proposes, climate would be the principal thing studied; all the furnishing and fitting up would have special reference to that end,

so that the pleasures found in it would be of a character which all who visit could share. Here would be supplied the climate of Southern Italy, where multitudes might ride, walk, or recline amid groves of fragrant trees; and here they might leisurely examine the works of Nature and Art, regardless of the biting east winds or the drifting snow. Here vegetation in much of its beauty might be studied with unusual advantages, and the singular properties examined of those great filterers of Nature which, during the night season, when the bulk of animal life is in a quiescent state, inhale the oxygen of the air; while in the day, when the mass of animal existence has started into activity, they drink in the carbonic supply given out by man and animals, which goes to form their solid substance; at the same time pouring forth streams of oxygen, which, mingling with the surrounding atmosphere, gives vigour to man's body and cheerfulness to his spirits.

“That in this winter park and garden the trees and plants might be so arranged as to give great diversity of views and picturesque effect, spaces might be set apart for equestrian exercise, while the main body of the building might be arranged with the view of giving great extent and variety for those who promenade on foot.

“Fountains, statuary, and every description of park and garden ornament would greatly heighten the effect and beauty of the scene. Beautiful creeping plants might be planted against the columns and trailed along the girders, so as to give shade in summer, while the effect they would produce by festooning in every diversity of form over the building would give the whole a most enchanting and gorgeous finish.

“That, besides these delightful objects, there might be introduced a collection of living birds from all temperate climates, and the science of geology, so closely connected with the study of plants, might be illustrated on a large and natural scale, thus making practical botany, ornithology, and geology familiar to the visitor.

“That should your right hon. House agree to give the public this source of public enjoyment, your petitioner would recommend that the wood boarding round the bottom tier of the building should be removed and replaced with glass, whereby the appearance would be marvellously changed; those who drive and ride in the park would, even in winter, see the objects within as they pass by, and the whole would have a light aerial appearance, totally unlike what it has at present.

“That in summer your petitioner would recommend that the whole

lower glass tier should be entirely removed, so as to give from the park and the houses opposite the Palace an appearance of continuous park and garden.

“That the residents opposite the Crystal Palace would have within a few minutes’ walk a beautiful park, decorated with the beauties of Nature and Art, under a skyroof, having a climate warmed and ventilated for the purpose of health alone, furnishing, close to their own firesides, a promenade unequalled in the world, and for the six winter months a temperature analogous to that of Southern Italy; and your petitioner has no doubt that the property in that immediate neighbourhood would from such an arrangement considerably advance in value, because of the recreation and exercise afforded to the inhabitants and their families.

“That your petitioner believes many suburbs of London will be led to desire to have such a winter garden in their neighbourhoods.

“That the advantages derivable from such an appropriation of the Crystal Palace would be many, and may be thus briefly summed up:—

“1. In a sanitary point of view its benefits would be incalculable.

“2. By its various objects it would produce a new and soothing pleasure to the mind.

“3. The great truths of Nature and Art would be constantly exemplified.

“4. Peculiar facilities would especially be given for the development, on a large scale, of the sciences of botany, geology, and ornithology.

“5. A temperate climate would be supplied at all seasons.

“6. Taste would be improved, by individuals becoming familiar with objects of the highest order of art, and by viewing the more beautiful parts of Nature without its deformities.

“7. Pleasant exercise could be taken at all times, and in every variety of weather.

“8. It would serve as a promenade or lounge, and as a place which could at all seasons be resorted to with advantage by the most delicate.

“In conclusion, your petitioner submits, as his opinion, that, having such great public attractions, the Crystal Palace might be rendered self-supporting.

“And your petitioner prays your right hon. House to preserve the building of the Exhibition for the public uses above submitted.

“And your petitioner will ever pray,

“JOSEPH PAXTON.”

In conclusion, I beg to solicit communications and suggestions from any lady or gentleman who is disposed to regard my proposition favourably.

EDWARD NEWMAN.

9, Devonshire Street, Bishopsgate,
July 13, 1851.

Occurrence of the Osprey in Norfolk.—During last week an excellent specimen of the male osprey was shot on the estate of S. M. Peto, Esq., M.P., of Somerlyton.—*J. O. Harper; Norwich, June 16, 1851.*

Note on the Nesting of the Passerine Owl in confinement.—A pair of passerine owls which I had in confinement, nested this spring in a small covered box which was placed in a corner of their cage. They laid four eggs, about the middle of the month of May, two of which they soon broke, but hatched the other two early in June. The two young ones did not long survive; how they disappeared I am unable to say, and am almost disposed to think the old birds must have devoured them. I regret that owing to the nest having been placed in a covered box, I was unable correctly to ascertain the period of incubation.—*J. H. Gurney; Easton, Norfolk, July 7, 1851.*

The Red-backed Shrike, (Lanius Collurio).—I shot a pair of these birds on the 9th, at Smitham Bottom, near Croydon, Surrey. The male I shot on the wing, the female I found an hour afterwards perched on the top of a thorn-bush, although I was within fifteen yards before I saw her, and stood to observe her some time, she never moved. I found the nest close by, a clumsy construction nine inches in diameter, composed of moss, wool, and dried grass; in it was one egg, fresh laid. A former brood had not long left the nest, and not the slightest repair or cleansing had been made.—*Richard Strangways; 70 and 71, Chiswell Street, July 15, 1851.*

Nesting of the Wren (Troglodytes vulgaris).—On reading a paragraph in your June number under the above heading (Zool. 3146), there came to my recollection a wren's nest, which I saw three or four years back, in a most singular situation. It was built in one of the "hatches" of the river at Winchester. I fear I shall be unable to describe its exact position, so as to make myself intelligible, but will endeavour to do so. The nest was built in the angle formed by the beam by which the "hatchway" is put up or down, and the "hatch" itself; so that the nest was raised and lowered together with the hatch, at one time therefore being close to the surface of the water, at another some feet above it. One would have thought this would have been the last place in the world the little fellow would have chosen. I one day saw the hatch lowered while the wren was in her nest; she flew out, perched herself on a neighbouring bush, and there sat uttering her shrill notes until the hatch was down and all quiet, when she returned to her nest. Whether any eggs had been laid or not I do not know, but if there had been, I should fancy the lifting up and down of the hatch must have broken them. One day, on visiting the spot, I was grieved to find nothing remaining but a few remnants of the hay of which the nest was formed. In the paragraph above referred to, an instance is given of a wren which took possession of the nest of a martin; a similar circumstance is described as occurring in North America, by Captain Brown, in a note to his edition of White's 'Natural History of Selborne,' at page 128,

where a wren is mentioned as having taken possession of an old martin's nest, and the martins, on returning to their old locality, were for some time kept off by the wren, but at length they succeeded in barricading the poor wren out, and kept forcible possession: the species of wren is not given.—*A. M. Norman ; Christ Church, Oxford.*

The Kingfisher makes no Nest.—I have the following note in M.S., written by the late Richard Strangwayes, Esq., of Kirby Fleetham, near Catterick, Yorkshire.—“On the 5th of April, 1827, I saw a kingfisher by the side of a small brook, where the bank was about six feet high. I approached the place unseen by the bird; it was busy in making a hole in the bank, about an equal distance from the top and bottom; the soil was sandy, and the hole was about two inches in diameter, and, I am quite certain, of its own forming, but did not then stay to examine it. I passed the place repeatedly for the following four weeks, but never saw either of the birds except during the first week, when I saw they had been busy every day, as fresh soil had been pulled out of the hole, but for the remaining three weeks their labour had ceased, and I thought they had forsaken the place. I went to the hole and made a noise, but all was still. I then enlarged the hole so as to admit my hand. It was eight inches deep, and the first object I felt was the old bird sitting on the eggs, she was in the hollow of my hand; I never grasped her, but allowed her to escape. There were five eggs; *nest there was none*—the eggs were on the bare mould. At the end of three weeks I paid her another visit, when I found the young half feathered, and surrounded by a crust of filth composed of their evacuations and the bones and other indigestible parts of fishes disgorged from the stomachs of the young. While the young are in the nest, this substance cannot harden, from the daily fresh accession; but when the young are fledged it hardens, and thus is formed what is erroneously called the kingfisher's nest. After the young had left the hole I examined it again minutely, and could discover no trace of a nest, except as described above. I am now satisfied that the kingfisher *makes no nest*; and if there is any of this substance found in the hole before the young are hatched, it is formed by the young of former years, for these birds, if undisturbed, will breed in the same hole for a number of years.” “In May, 1828, I found a kingfisher's nest: the young in it were just hatched, and were without nest, upon the bare mould. I visited them a fortnight after, they were surrounded by filth in so putrid a state that maggots had bred in it.” I have two other notes on this subject, of later dates, by the same author; but they are only repetitions of the above. The writer was a true sportsman for upwards of sixty years, thirty-five of which were chiefly devoted to fishing and shooting; at the age of seventy-five he was “a dead shot,” and seldom known to miss his aim, and could tire many a youthful sportsman.—*Richard Strangwayes ; 70 and 71, Chiswell Street, July 15, 1851.*

Occurrence of the Avocet (Recurvirostra Avocetta) at Yarmouth.—Two fine specimens of the avocet were killed at Yarmouth on Thursday last, and are being preserved by Mr. Knight, of this city.—*J. O. Harper ; Norwich, June 16, 1851.*

The Domestic or Mute Swan in the Leamington Gardens.—We could only briefly announce, in our last week's impression, the singular circumstance of the swans on the lake in the Jephson Gardens, producing the extraordinary number of *nine cygnets*; and we are happy to observe that both the old ones, and the whole of their progeny, appear in excellent health, and enjoy greatly the sunny days alternately on the lake and the river; although the male bird is not altogether in the most amiable mood when any person approaches near them. It may not now be out of place if we give a few particulars of this majestic bird, which the poet Wordsworth so elegantly describes.

"Fair is the swan, whose majesty prevailing
 O'er breezeless water, on the garden lake,
 Bears him on while proudly sailing
 He leaves behind a moon-illumin'd wake:
 Behold! the mantling spirit of reserve
 Fashions his neck into a goodly curve;
 An arch thrown back between luxuriant wings
 Of whitest garniture, like fir-tree boughs
 To which, on some unruffled morning, clings
 A flaky weight of Winter's purest snows!"

We believe it is almost, if not quite, an unprecedented circumstance, of this bird producing so great a number as *nine* cygnets at one time; the largest brood we ever remember to have seen recorded was five, and more generally, from two to four. An intelligent correspondent says that whilst in conversation with a gentleman, who was one day this week admiring the movements of the old ones, with their numerous progeny, on the lake, that individual stated that he had never seen more than six, although he had for more than half a century resided where they were constantly kept; so that both from recorded facts and all the inquiries we have been able to make, we believe this will be found to be a very singular incident in natural history. The number of eggs laid was nine, although we believe the gardener confidently asserts, on the authority of a sly peep at the nest, that there were only eight; be this as it may, there are doubtless nine cygnets daily sailing on the lake. The day after they took to the water, no less than five of them were seen nestling beneath the wings of the female; the other four swimming round the old ones, no doubt envying the good fortune of their companions, and the snug berth they were enjoying. A few years since so little was known of this bird of Apollo, although domesticated in this country from a very early period, that only two species of swans were recorded; but the progress made in the science of Natural History, and the great attention paid to Ornithology in particular, has brought to light four varieties of this favourite bird, and we have now not only the wild and domestic swans, but Bewick's and the Polish swans. The swans, with their extraordinary progeny, will no doubt contribute to the amusement of the numerous visitors to our delightful Jephson grounds. Mr. Yarrell observes in a letter to the writer:—"The brood of swans in the Jephson Gardens is the largest I ever heard of; seven being considered a large number, the generality of broods being much less than that. We get no such broods in St. James's Park."—*Contributed to the 'Leamington Courier' of May 18, 1851, by John Evans, Esq., of that place.*

The Great Crested Grebe (Podiceps cristatus) in Norfolk.—In the months of April and May last I collected twenty-nine of these birds, in full summer plumage, all shot in Norfolk. Four of them I preserved, and they are now in the Great Exhibition in Hyde Park, where they are exhibited by Messrs. Robert Clarke and Sons, the furriers, in Class 18, to which they very appropriately belong, as the breast of this bird has become a fashionable and very beautiful substitute for furs, (see Manufactured Articles in the Crystal Palace). The rest of the skins I have had manufactured into ladies' boas and muffs, and may perhaps say they are the first British specimens used for this purpose. The market for grebe is chiefly supplied from southern Europe.—*Richard Strangeways; 70 and 71, Chiswell Street, July 15, 1851.*

Occurrence of the Caspian Tern near Lausanne.—I heard yesterday from an ornithological friend of mine, resident at Lausanne, on the Lake of Geneva, that a fine

adult specimen of the Caspian tern (*Sterna Caspia*), was shot near that place about a fortnight ago. Another, also in adult plumage, was shot near Lausanne before I left Switzerland early in May, 1851. It is of very rare occurrence there, though all our commoner species of tern are pretty abundant on the lake in summer.—*T. W. Powys*; 10, *Grosvenor Place*, July 1, 1851.

A Toad in Difficulties.—Walking with a friend round a fish-pond on the 30th of June last, my attention was attracted by a toad of forlorn aspect, crouching on the marshy edge of the pool. Something was evidently wrong, so I stopped to investigate, and was much surprized to find that the middle toe of one of the hind feet was firmly held between the valves of a mollusk about half an inch in diameter, *Cyclas cornea*, I think, and thus all attempts at locomotion on the part of the poor toad were effectually impeded. When I detached the bivalve the toad proceeded to make the best use of its restored liberty, by seeking the shelter of the long grass and sedge, its gravity a good deal disturbed and its leg a little crippled by the accident.—*Robt. C. Douglas*; *Forebridge, Stafford*, July 14, 1851.

The Ballan Wrasse (*Labrus maculatus*, *Bloch*).—I lately procured a very fine specimen of this fish, which is frequently caught along our coast. It measured in length fully 19 inches, the largest size I have seen noted. The dorsal and anal fins differ considerably in figure from those represented in the cut given in Yarrell's 'British Fishes,' (Vol. i. p. 275): in fact, a drawing of the present specimen would produce a very different figure. In the first instance, the terminating and larger lobes of both the fins referred to, are larger and much more rounded throughout; and in the second, the two first spinous rays of the anal fin are wider apart, and extended, as in the figure of *Dentex vulgaris* (p. 111, *ut supra*). The snout is largely protractile, a long shaft of bone proceeding from each of the two pieces forming the superior maxillary jaw, and extending upwards for more than an inch under the common integuments of the skull. These shafts are arranged alongside of each other, and seem only to be united by a gristly membrane at their origin. The fleshy lips are plaited or channelled by longitudinal folds, particulars, I presume, characteristic of this species, but which I have not seen recorded by any ichthyologist.—*Geo. Harris*; *Gamrie, Banffshire*, June 19, 1851.

Proceedings of the Zoological Society.

Evening Meeting, June 10, 1851.—*JOHN GOULD*, Esq., F.R.S., in the chair.

Mr. Slater read descriptions of two new species of birds of the genus *Tænioptera*, which he characterized under the names of *T. erythropygia* and *T. striaticollis*. These birds, of which the specimens were derived from the collection of Edward Wilson, Esq., are natives of Ecuador.

The Secretary read a paper by Dr. Nicholson, on a new species of *Artamus*, discovered by him in Northern India.

The Secretary read a second communication from Dr. Nicholson, on the habits of the tailor-bird, as observed by himself at Surat and at Raghote.

Mr. Tomes demonstrated the structure of the poison-gland which supplies the fang in the "Rat-tail" of Sta. Lucia (*Craspedocephalus atrox*), from a dissection recently made in a specimen which died in the Menagerie. Mr. Tomes' communication was illustrated by drawings from the pencil of Mr. Flower, F.Z.S.

The Secretary read three communications from Mr. Adams, on the genera *Scutus*, *Monotygmia* and *Nematura*: and the meeting adjourned to June 24.

Evening Meeting, June 24.—JOHN E. GRAY, Esq., V.P., F.R.S., in the chair.

Mr. Lovell Reeve communicated the description of a species of *Bulimus* from Brisbane, Moreton Bay, Australia, which he considered new to science, and which he characterized under the name of *Bulimus Maconelli*. The fine specimen from which Mr. Reeve's description was drawn up, forms part of the collection belonging to the Manchester Museum, and was exhibited to the meeting.

The Secretary read some notes on the Birds of Madeira, which had been observed by Mr. Vernon Harcourt, during his residence on that island. Mr. Harcourt's observations are to the effect that 30 species of birds breed in Madeira, and that 65 species are occasional visitants, numbers which greatly exceed any previous account of the ornithological riches of the island.

Mr. Westwood read a paper upon the dentition of the tiger beetles, which was illustrated by several careful drawings of their structural peculiarities.

Mr. Gray communicated a notice of the recent occurrence of *Ryalecus Glesne*, which appears to become more common in the British Seas.

The Secretary stated to the meeting that he had just received a large and interesting collection of birds, mostly collected in Trinidad, from His Excellency, Lord Harris.

Mr. Gould directed attention to some of the most interesting among them.

The meeting then adjourned to July 8.

July 8.—In consequence of the death of the President, no meeting was held. —
D. W. M.

Proceedings of the Entomological Society.

July 7, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

The following donations were announced, and thanks ordered to be given to the donors thereof:—'The American Currant-moth, (*Abraxas* ? *Ribearia*);' by Asa Fitch, M.D.: 'A Catalogue with References and Descriptions of the (Homopterous) Insects collected and arranged for the State Cabinet of Natural History, New York;' by Asa Fitch, M.D.: both presented by the author. 'Transactions of the Linnean Society,' Vol. xx. part 3: 'Proceedings of the Linnean Society,' Nos. 41—44, pp. 49—112: 'List of Members of the Linnean Society, 1850:' all presented by the Society. 'The Zoologist' for July; by the Editor. A *Blatta* and a *Pentatoma*, on which were living larvæ of one of the *Tenebrionidæ*, imported from Abyssinia in a parcel of the new vermifuge called "Koussou;" presented by William Mansell, Esq.

Mr. Edwin Shepherd exhibited specimens of *Phibalapteryx polygrammata*, *Harpalyce Sagittata*, *Eupithecia sparsata*, *Pseudicia funerella*, *Cosmopteryx Lienigiella*, and a new species of *Gelechia* allied to *dimidiella*; all recently captured at Burwell

Fen, Cambridgeshire: also *Phoxopteryx* *Upupana*, *Ephippiphora* *obscurana*, and a new *Spilonota* allied to *dealbana*; all from Darenth Wood: and a very fine *Stauropus* *Fagi*, captured at Black Park, Bucks.

Mr. Augustus Sheppard exhibited a fine series of *Depressaria* *assimilella*, reared from larvæ found on broom.

Mr. J. Jenner Weir exhibited *Bucculatrix* *Cidarella* from alders, *Gracilaria* *Ononidis* from *Genista tinctoria*, *Æchmia* *oculatella* from *Eupatorium Cannabinum*, and *Æ. metallicella*; all captured near Pembury, Kent.

Mr. Smith exhibited the specimen of *Gastropacha* *picifolia* caught by Mr. Atkinson, mentioned at the June meeting; also living specimens of *Chrysomela* *cerealis*, which had fed for the last fortnight on leaves of wild thyme, on which plant Mr. Foxcroft found them in the Pass of Llanberris, N. Wales.

Mr. Douglas exhibited, in illustration of the natural history of the following Tortrices:—

A pupa-skin of *Ditula* *angustiorana*, projecting from the interior of one of the shoots of yew exhibited at the February meeting.

A pupa-skin of *Cochylis* *Francillana*, and a section of a dry stem of an umbelliferous plant, in which the larva had fed.

A pupa-skin of *Pædisca* *bilunana*, with a catkin of birch inside which the larva fed.

Dry capsules of *Saxifraga* *granulata*, gathered at Southend, in which he had found pupæ which produced *Phaleroptera* *Icterica*.

It was somewhat singular that all the six or eight specimens of this insect that had appeared were males; the females (*longana*, *Haw.*) he had reared from larvæ found on *Aster Tripolium* growing near Gravesend, which quitted the plant prior to changing to pupæ; so that granting the larvæ of the pupæ found in the capsules of *Saxifraga* *granulata* had fed therein, it would appear, judging from the instances in question, either that the sexes fed on different plants, or that these two insects had been erroneously united as one species. It was not safe to speak positively without further experience, but it would at least seem that if there were but one species, the larvæ were not only polyphagous, but had different habits on different plants; in one case changing to pupæ in the seed-capsule of the plant, in the other quitting the plant and retreating to the earth.

Mr. S. Stevens exhibited *Chrosis* *Audouinana* from Black Park, *Psyche* *reticella* from Sheerness, and *Eupithecia* *tenuiata*, bred from fallows.

The President directed the attention of the meeting to the descriptions of the winter insects of New York by Dr. Asa Fitch; specimens of the greater part of which were intended to be presented to this Society.

Mr. S. Stevens stated that Mr. Walton had had the kindness to determine the names of the two new British Curculionidæ he had recently captured. That from Gravesend he had no doubt was the *Mecinus* *collaris* of Germar, for it answered exactly to Germar's description; the other from Fenny Stratford is *Acalyptus* *rufipennis* of Schönherr. Of this, Mr. Walton in a note, observes:—"The genus *Acalyptus*, Schönherr states, is not very dissimilar to *Sibynia*, and is partly like *Tychius*, but differs in the construction of the funiculus of the antennæ and in the form of the rostrum. The location of the genus is next to *Sibynia*. Schönherr records only two species in the genus, viz., *A. Carpini*, *Herbst.*, and *A. rufipennis*; but I am of opinion that *Carpini* is identical with *rufipennis*, which is founded upon Gyllenhal's description. If I am right, the synonymy will stand thus:—

"*Acalyptus Carpini*, *Hbst.*, *Gyll.*, *Sch.*

"*Ellescus sericea*, *Dahl.*, *Dej.*

"*Sibynia sericea*, *Sturm.* (*Ins. Cat.*)

"*Acalyptus rufipennis*, *Schön.*

"According to Gyllenhal, it occurs plentifully in Sweden upon the flowers of *Salix cinerea*."

Mr. Saunders alluded to the great abundance of cockchafers this year, and stated that he had made experiments on the relative weight of males and females. He found that in twelve males the average weight was $13\frac{1}{2}$ grains each, in twelve females $20\frac{1}{2}$ grains.

The heaviest male weighed 17 grains, the lightest 12 grains.

The heaviest female weighed $24\frac{1}{2}$ grains, the lightest 16 grains.

The difference between the heaviest male and female was $7\frac{1}{2}$ grains.

The difference between the lightest male and female was 4 grains.

The difference between the lightest male and heaviest female was $12\frac{1}{2}$ grains, the heaviest male being 1 grain heavier than the lightest female.

The President said that these observations might possibly prove to be more than curious, and to have an economic value; for in some places on the continent, in seasons when cockchafers were abundant, quantities had been collected and pressed for the sake of the oil they afforded; and in Transylvania they had been made into a paste with which cart-wheels &c. had been greased.—*J. W. D.*

Proceedings of the Microscopical Society of London.

June 18, 1851.—Dr. ARTHUR FARRE, President, in the chair,

A paper by P. H. Gosse, Esq., 'On the large Actinophrys of Eichhorn, and on the Structure of the Flesh in the Polygastrica,' was read.

After citing the observations of Eichhorn, to the effect that he witnessed the capture of small Crustacea by the tentacles of this animal, and the digestion of them within its body, which have been doubted by later naturalists, the author mentioned that he had himself met with the animal on two occasions, though it appears to have been unseen since the days of its first describer. Mr. Gosse then characterized the species, to which he assigned the name of *Actinophrys Eichhornii*. It is a whitish globe, distinctly visible to the naked eye, and seen, under the microscope, to be studded all over its surface with long, delicate, pointed, divergent rays. These organs have the power of arresting, by mere contact, animals of much higher organization, which the author witnessed, and thus confirmed the testimony of its discoverer. The paper went on to describe the rays as wholly retractile within the body; and other organs, in the form of clear oval bladders, also capable of being protruded and retracted, at various parts of the surface; as well as vesicles contained within the substance, and which, frequently inclosing food, evidently perform the part (the author thinks only temporarily) of stomachs.

Mr. Gosse described the body of this animalcule as made up of an aggregation of large, distinct, perfectly transparent, unnnucleated cells, pressing over and against each other, and thus rendered polygonal. Their walls are not membranous, but composed of a semifluid viscous mucus, resembling the bubbles on the surface of soapy water. This substance is endowed with contractility, which the author proved from several circumstances; and he considered that the protrusile bladders and the stomach-cells are only modifications of the common cells of the flesh. Mr. Gosse drew analogies to

illustrate this structure from the *Medusæ*, the *Hydræ*, and especially from the *Spirostoma* and the *Stylonychia*, polygastric animalcules; and his observations went to show that the organization in this class of animals is exceedingly simple, consisting of little more than a homogeneous fluid drawn out into spherical films or cells, probably inclosing a very subtle vapour.

A second paper, by H. C. Sorby, Esq., 'On the Tensions developed among the Tissues of Wood by its Growth,' was read.

The author commenced by stating, that in studying the depolarizing structure of wood, he had used as a polarizer a rotatable large Nichol's prism, placed behind the lenses of the achromatic condenser; and as an analyzer, a film of selenite and another Nichol's prism, which could be rotated independently or conjointly, placed over the eye-piece. By these arrangements, he obtained abundance of light when using high powers; and by rotating the selenite, the direction of the positively and negatively doubly-refracting axes of the object under examination were easily ascertained.

Upon examining with this apparatus longitudinal sections of recent wood, with a power of about 400 linear, they were found to consist of laminæ, some of which possess positive and others negative double refraction in the line of their length, the principal axes lying one in that direction, and the other at right angles to it. This alternation of positive and negative laminæ, and the probable cause, form the principal subjects of this paper. The number of alternations varies, but from five to ten are usual. The passage from one to the other is often quite sudden, but is sometimes gradual. The wood considered as the best for showing these effects, was that of the *Corniferæ*; and the effects of polarization, as exhibited by the medullary rays, the disks, the spiral fibre, and the ducts, were described. The cause of alternation of the positive and negative laminæ, is ascribed by Mr. Sorby to the tension produced by the growth of the plant; and he explains it by supposing that first of all the original walls of the tubes of which the laminæ are composed were neutral, or had such a variable, slight, positive and negative action as is seen in cellular tissue, and that then inside them woody matter was deposited, which had a tendency to expand in the line of the length. This, by stretching the original walls, would produce in them a positive action in the line of their length, and their reaction on the fresh-formed tissue would develop in it a negative structure; and a constant repetition of this process would produce the various alternations now under consideration. In conclusion, he stated that although these suppositions might not adequately explain all the phenomena that might be observed, still this structure proves that there have been alternations of ligneous tissue, either having tensions in different directions, or a self-existing double refraction of different characters; but he considers the supposition that the effects are due to tension agrees with the neutral action of some parts and the general properties of others much the best: and he felt convinced that the study of the double refraction of the tissues of plants would be of great utility in arriving at a correct knowledge of the manner of their development.

Another paper, 'On the Minute Structure of a Species of *Fangasina*,' by W. C. Williamson, Esq., was also read.

In former communications to the Society, the author pointed out the existence of a curious system of tubes and canals, penetrating the parietes and septa of several species of foraminiferous shells, in which the structure of *Polystomella*, some species of *Nonionina* and *Amphistegina* were described. On making sections of a species of *Fangasina*, *D'Orb.*, from Manilla, the existence of a much larger and more interesting

arrangement of tubes was discovered. The shell is constructed on the inequilateral plan of *Truncatulina tuberculata*, and viewed as an opaque object, exhibits a series of vertical translucent spaces, with the intervening parietes to which the foramina are limited. Along each of the vertical septal lines there exists an irregular double row of very distinct pits or depressions; similar pits are also seen inferiorly in the radiating septa which divide the different segments of each convolution. On making a series of sections of the shell, we learn that these pits or depressions are the external orifices of a curious system of intraseptal canals and spaces ramifying in its interior. A section taken close to the inferior flat surface of the shells exhibits a spiral translucent septum separating the convolutions; the segments present the ordinary foraminated aspect, and are arranged in the usual spiral manner; in the radiating interseptal lines are seen numerous small orifices, which open, by means of short canals, into the interseptal spaces immediately above them. On making a second section, parallel to the first, but a little above the peripheral margin, we perceive that there exists a number of large branching intraseptal tubes and passages, which commence at the innermost segments, and proceed in a radiating manner towards the periphery; these appear designed primarily to multiply the number of external orifices; but in addition to this, they subsequently facilitate the establishment of a free communication between the internal intraseptal spaces and those of the newer convolution, in which the septa are more numerous. Small circular apertures appear along the course of these tubes, and mark as many points where the section has traversed the orifices of the canals descending to the inferior surface of the shell. A third section, made parallel to the foregoing, is cut through the shell a little above the superior extremities of cells belonging to the central convolutions. We here see that the portions which, in the former sections had the appearance of radiating tubes, are really the lower borders of vertical interseptal spaces, but at the same time giving off true divergent cylindrical canals from their external margins, which penetrate the thick parietes of the shell. Whilst these spaces communicate externally, they open internally into a large irregular cavity, the true nature of which is better understood by reference to a vertical section of this instructive object passing nearly through its centre; this section, if it has not traversed the primordial cell, has certainly crossed the secondary one, along with four others, in the successive order of their development. Whilst their inferior portions are nearly on a uniform level, the upper extremities of those belonging to successive convolutions become rapidly elongated, leaving between them a large, irregular, conical space. In the species under consideration, a new and curious feature is presented; the cavities in the translucent calcareous shell are thickly lined with a dark olive-brown substance: this substance not only exists in the interior of all the cells, but also occupies the intraseptal spaces and their respective canals, as well as the irregular cavity in the umbilical centre of the shell. It is most probable that this brown substance is really the desiccated soft animal. A thin superficial section, made in the plane of the oblique sides of the conical shell, exhibits some of the septa with the large orifices of their interseptal canals, with the external parietes of some of the segments densely perforated with minute pseudopodian foramina, and a small lateral portion of the dome-like apex of the shell, which is perforated with apertures, through which a free communication is maintained between the external medium and the inclosed space. The nature of the latter varies considerably; sometimes it exists in the form of a large irregular cavity, and at others as an intricate network of large canals. The character of the external orifices also varies: in some examples they are large and patent; in

others, numerous smaller tubes, ascending from the subjacent network, converge at some superficial depressions which occupy the position of the larger orifices.

The above facts show that the subject of the present memoir presents a very different structure from any of the Foraminifera hitherto described, but they support the conclusion at which the author arrived in a preceding memoir, *viz.*, that the soft animal has the power of extending itself far beyond the limits of any individual segment, and is thus enabled to secrete calcareous matter in other situations than the mere investing parietes of its own cell. It is only in this way that we can explain the production of the dome-like covering which incloses the central umbilical cavities and their ramifying canals. But if it should be ultimately proved that the soft tissues have occupied all these irregular cavities, we shall then have a form of organization which, from its great variability of contour, will approach more closely to the sponges than any hitherto described.

The author concludes by stating that although these details may appear to be tediously minute, yet it must be remembered that until we are accurately familiar with all the leading types of structure existing in this interesting group of organisms, we cannot be in a condition to arrive at final conclusions respecting their nature and zoological position.—*J. W.*

Proceedings of the Society of British Entomologists.

THE July meeting of the above Society was held on the 1st instant, at their rooms, 10, Fountain Place, City Road; when the following insects were exhibited, all taken during the past month:—*Cerura Furcula*, *Apatela leporina*, *Acronycta Ligustri*, *Ceropacha fluctuosa*, *Aplecta tincta* and *herbida*, *Heliothis marginata*, with many others.

Mr. Harding exhibited a singular variety of *Aplecta nebulosa*, in which the usual broken black line near the margin of the superior wing was replaced by an irregular well-defined black band.

Mr. Shield exhibited a specimen of *Biston prodromaria*, in fine condition, taken on the 24th of June, at Caen Wood.—*J. F. N.*

The Entomological Club.

THE annual field-day of this little Association, took place at Birch Wood on Wednesday, June 18; the members and their friends dining together at the Bull Inn, under the Presidency of Matthew Marshall, Esq. There were present:—Messrs. Bennett, Bowerbank, F.R.S., Busk, F.R.S., Clow, Deane, Elsey, Gratton, Hanson, Hutchinson, Keddell, Marchant, Marshall, Newman, F.L.S., Powle, Salmon, F.L.S., Saunders, F.L.S., Smith, Spence, F.R.S., Stevens, F.L.S., Tebbs, Van Voorst, F.Z.S., Ward, F.L.S., Wade, White, F.L.S., Woodward, F.R.S., and Yarrell, V.P.L.S.

Mr. Wollaston, of Eltham, kindly exhibited to some of the party who called on him, an extremely fine living specimen of *Orchis hircina*, which had been recently dug up at the old and often recorded Kent locality.

Entomological Localities. By J. W. DOUGLAS, Esq.

(Continued from page 3185).

DARENTH WOOD.

"A little lowly hermitage it was,
 Downe in a dale, hard by a forest's side,
 Far from resort of people that did pass
 In travaill to and froe : * * *
 * * * * * * * *
 Arrived there, the little house they fill,
 Ne looke for entertainment where none was."

Spenser.—Faerie Queene.

This is the Fox and Hounds at "Darn," as the natives call it, at least the description suits it well even now, when one can go within a mile or two by rail; the latter part applied better fifteen years ago, when nothing eatable was to be had without twelve hours' notice at least. In 1836, my dim notions of Darenth Wood, received from the works of Stephens and others, were rendered more vivid by the mention thereof in the "Wanderings and Ponderings of an Insect-hunter," published in the 'Entomological Magazine,' and I determined to explore for myself. How in my infantine knowledge of Entomology I wandered by day and by night through its leafy expanse; how I was never tired of its sights and sounds; and how my delightful experience served ineradicably to fix my taste for insects, it matters little to tell: but I remember the many hours spent here with a feeling akin to the blissful ecstasy of "Love's young dream."

I mentioned the railway as a means of getting here; and if my reader be a man who is accustomed to go direct to his point, he will travel by it and alight at the Greenhithe station of the North Kent line; but if he be not in a hurry, and like to study human nature by the way, he will go by steam-boat to Greenhithe. Then he will have an opportunity of observing that most curious of all animals, a genuine Londoner, in his most unusual of all practices—taking his pleasure. There is the young swell, great in his neck-tie and self-estimation, patronizing the captain, and endeavouring to show him how much he knows. There is the old mother, wondering in her simplicity how it is that one steamer can go faster than another; telling all around her how pleased she is with a steam-boat, and how she hates "them railroads," for she never reads a paper, she says, but she reads of "haxi-

dents ;” and “it must be so very uncomfortable to be blowed into anatomies and die with broken bones !” There is the veritable London tradesman, who thinks “the country is all very well on a fine day in summer, but there is nothing like London ;” and to prove it brings his newspaper and drinks London porter all the way. If, as Cowper says, and I think few doubt it,—

“That man immured in cities, still retains
His inborn inextinguishable thirst
Of rural scenes,”

then is it not a fit subject for regret, that when he does escape from his prison, his want of knowledge of the objects he sees prevents his enjoying the greatest charm Nature possesses ? But to return.

Years before I was born this wood was hunted for insects ; and although rivals have appeared in all directions, it still has many attractions. A dozen nets at the Fox were not an uncommon sight a few years since ; how it is now I cannot say, not having frequented the locality much of late, but whether many or few go, some rarities *must* from time to time occur. The whole wood rests on chalky soil, and is composed of oak, hazel, birch, maple, willow, dog-wood, spindle, privet, blackthorn, and a host of other trees and shrubs, while the more lowly growth is very various, and prolific in insects of all orders. I enumerate some of the more uncommon Lepidoptera found here.

Thecla Betulæ. The first week in September, flying about oaks : the larva feeds on blackthorn at the end of May.

Trochilium Allantiforme. Greenhithe, (Ent. Mag. i. 79).

Sesia Bombyliformis and *S. Fuciformis*. On the flowers of *Ajuga reptans*, in May.

Notodonta Cucullina. Once taken by Mr. J. F. Stephens.

Ptilophora plumigera. Larva on maple.

Ceropacha fluctuosa. At sugar ; June.

Noctua rhomboidea. At sugar ; July and August.

Neuria Saponaria. At sugar ; June.

Acronycta Ligustri. At sugar ; June.

Hadena adusta and *H. contigua*. At sugar ; June. The larvæ of the latter I have found in September on young birches.

Polia tincta. Larvæ on birches ; April.

„ *advena* and *P. herbida*. At sugar ; June.

Cloantha conspiciellaris. Rarely, flying ; May.

Heliothis marginata. Rarely, at sugar ; June.

Acontia luctuosa. Among clover, outside the wood ; June.

- Tephrosia extersaria*. By beating; June.
Melanippe amnicularia. By beating; June.
Lobophora polycommata. March, rare.
Dosithea bisetata. By beating; June.
Acidalia subsericeata. By beating; June.
Minoa Euphorbiata. By beating; June.
Tortrix semialbana. Roman road on the north of the wood; end of June.
Spilonota pauperana. On wild roses; March.
Eriopsela quadrana. May.
Heusimene fimbriana. By beating; March and April.
Carpotapsa splendana. By beating; June.
Psecadia decemguttella. End of May. Larvæ feed on *Lithospermum officinale* in August, (Zool. 2332).
Hypercallia Christiernana. Mr. J. F. Stephens has specimens he took here many years ago, but it has not occurred since.
Phoxopteryx Upupana. June.
Ephippiphora obscurana. June.

Having been to this wood but seldom since I collected *Micro-Lepidoptera*, I am unable to indicate how many more rarities occur; but there is no doubt that a place so large and so good must produce many which only want to be looked for, or, if already found, to be noted for the benefit of present and future collectors.

GREENHITHE AND SWANSCOMBE WOODS.

A list of captures by Mr. Hodgkinson in these woods, which are contiguous to Darenth, and also of captures in the chalk-pits at Northfleet, have already been given in this work (Zool. 2328); among them are several rarities.

J. W. DOUGLAS.

2, Eton Grove, Lee, Kent, June, 1851.

On Hunting diligently for Lepidoptera.—On looking over the 'Zoologist' for the present month, I find some very useful observations by Mr. Douglas upon the necessity of diligently hunting up any locality of note, (Zool. 3182); and I beg to add the testimony of my experience in favour of his very useful advice. It is not enough that you visit a locality frequently, it is necessary to hunt it thoroughly at all times of the day and evening, as well as at all favourable times of the year; for instance, one of the

insects found in the locality mentioned by Mr. Douglas, namely, *Chersotis Agathina*, we never find flying until the evening is so far advanced that we can scarcely see it, but then it hovers round the dense bundles of heath-flowers, somewhat slowly, and may be easily captured by keeping a steady look-out about a yard in front of your feet. *Hypenodes humidalis* is also very regular in its time of flying, not one being visible until about half-past 6, P. M., when you may take them in plenty until about 8 o'clock. The pretty little *Rhodaria sanguinalis* has this season shown a partiality to the same time of evening as *Hypenodes humidalis*, but not so decidedly; this however may in part have been owing to the intense heat of the weather from the 24th to the end of June, the principal time of their flight. I visited New Brighton sand-hills to look for them on the 27th ult., the day being excessively hot. I succeeded in raking up about fifty before 6 o'clock P. M.; they then began to fly, and I took nearly as many more in little more than half an hour, when I was obliged to leave them flying on all sides, in order to catch the ferry for Liverpool and the train for Warrington.—*James Cooper; Museum, Warrington, July 2, 1851.*

Capture of Elachista locupletella, (Stainton's List).—To prove how often a rarity may be stumbled upon by the merest chance, the present example may serve as an illustration. On my way to dinner about a month ago, my attention was drawn to the top of an *Epilobium*, on seeing it all twisted together. Having ascertained that it contained a chrysalis, I cut it off and carried it home. For a week I watched it very carefully, and was at last rewarded with a fine specimen of the above-named insect. For several days afterwards I eagerly sought the place from whence I took the chrysalis, and found it in plenty. I had concluded at first that it was an *Epilobium*-feeder, but investigation showed otherwise, as but one plant was near the place. The ground is marshy, and abounds with reeds, docks, white ladies' bed-straw, and forget-me-not.—*John Scott; London Works, Renfrew, July 21, 1851.*

Inquiry respecting Pupæ.—I inclose two pupæ, and shall be much obliged if you can inform me what insects they belong to. One is white and soft, this I have put into spirits of wine; the other is inclosed in a hard brown skin. I found them in the following manner. On the 17th of last May I observed a large female wasp fly into a hole in the sandy bank of the river Aine; in a few seconds another wasp, also apparently a large impregnated female, flew up to the same place, but seeing me did not enter the hole. The one that I first noticed shortly came out again, when I captured it with my forceps. It was a large female of *Vespa vulgaris*. Wishing to ascertain whether it had formed any part of its nest in the bank, I dug away some of the sand with my stick, and at the distance of five or six inches from the surface, I turned out the pupæ that I have sent you: I noticed several of the soft white ones, but only one of the others. They were contained in oval cells formed in the sand; the cells were tolerably smooth internally, but had no lining of any kind. The sand was loose and crumbling, and as I had no other tool than my walking-stick, I could not ascertain whether the cells were arranged together in any manner. After digging as deeply as I could into the bank, I found no traces of the nests of the wasps.—*R. H. Meade; Bradford, Yorkshire, July 15, 1851.*

[The pupæ exhibit a fully developed prothorax, and are clearly those of a coleopterous insect, and one of the *Heteromera*, but I cannot pronounce on the genus. I consider the evidence insufficient to show any parasitism.—*E. N.*]

On the Occurrence of the Pupa of a predaceous Beetle in the vicinity of the Nests of Wild Bees.—On the 31st of May I noticed a number of wild bees (*Andrena albicans*)

flying in and out of numerous small holes in a little grassplot, in front of a house in the immediate vicinity of the town. There must have been as many as forty or fifty holes within the space of a couple of square yards, close to the door. I had the curiosity to dig into the ground, and found that the holes penetrated seven or eight inches deep, and each terminated in an oval cell, formed in the mould, which was rather of a clayey consistence. The cells were beautifully smooth inside, measuring about half an inch in the long diameter, by a quarter of an inch in the short diameter, without any lining, but having the appearance of being varnished. Each cell contained a small grub, and a round pellet of pollen of a dark green colour, in shape and size exactly resembling a pea. I found in several instances two of these cells, one placed exactly on the top of the other, not fitting into it, but separated by a small interval. The lower part of the hole leading to the cells, when the latter were complete, was filled up with loose earth. The bees appeared to throw in again the mould which they first placed round the margins of the holes at the top, for on watching the place for several days, I noticed that a little mound of dirt, almost like that thrown up by an earth-worm, which I had noticed in the evening, had frequently disappeared in the morning. I was surprized at the rapidity with which the bees reconstructed their burrows, when, as I supposed, the cells at the bottom were incomplete. One day I carefully stopped up some of them, obliterating all appearance of the holes at the top, and by the next morning they were perfectly reformed. I do not know whether the bees of this family usually stay in their burrows in the night during the progress of their labours, but on digging out one of the cells in the evening I found a female bee in her burrow several inches below the surface of the ground. I may here mention that although I caught many individual bees, and examined them, they were all females, I did not notice a single male. On digging in one spot where there were several bees' cells close together, I found a pupa of a coleopterous insect, contained in a cell about the same size as that of one of the bees, but less compactly made and rough internally, and about seven inches below the surface. The pupa was quite white, except the eyes, and soft, lying in a curved position, the head and legs being doubled inwards; it was quite naked, having no membranous or other covering. I placed it in a small box and took it home. On looking at it the next morning, I found that it had assumed its perfect form and was walking about the box; I then recognized it as the *Calathus cisteloides*, a very common black beetle in this neighbourhood. It was still perfectly white and soft, the eyes being the only black parts. Wishing to preserve it in its present state, I immersed it at once in spirits of wine, but was afterwards sorry that I did not keep it alive, and notice whether exposure to light and air would give it its natural black tint. I could not discover any kind of exuviae in the box; it seemed merely to have unfolded its limbs and resumed an active life. Was the occurrence of this beetle among the cells of the bees simply fortuitous? Does the larva of the *Calathus*, when about to assume the pupa state, bury itself in the earth, and there form a cell, in which it remains until ready to take on its perfect form? Or is there any probability that this insect feeds upon the larvæ of the bees, and is thus found among them? I ask these questions, as there appears to be very little known at present respecting the transformations of the tribe of predaceous beetles.—*Id.*

On the occurrence of Aphides in an Ants' Nest.—On the afternoon of May 3, 1851, I found two large Aphides under a flat stone, in the midst of a colony of small red ants (*Myrmica rubra*). They were walking about leisurely, and were surrounded by numbers of ants, which seemed to take no notice of them, but on being disturbed

occupied themselves in carrying off their larvæ and pupæ to places of concealment as quickly as possible, leaving the Aphides to their fate. Two specimens of the latter were all that I could find. They were of an oval shape, full and swollen, of a pale apple-green colour, $1\frac{3}{4}$ line in length, and 1 line in breadth, with very minute black eyes, the antennæ and legs tinged with brown, and the proboscis blackish at the apex. The antennæ were not more than one third of the length of the body, and were composed of 5 joints, of which the 1st and 2nd were very short, the 3rd very long, being nearly one half the whole length of the antenna, the 4th not quite half so long as the 3rd, and the 5th rather shorter than the 4th, and conical: the antennæ were slightly thickened towards the apex. The proboscis was half the length of the body. The latter was quite smooth, apterous, and destitute of anal tubercles. The legs were rather short. They approached most nearly to the description of the genus *Rhizobius* of Burmeister,* one species of which, he says, is found under stones in the spring, as well as at the roots of plants. I am not aware whether this insect has been as yet described as an inhabitant of Britain; but in the present communication I am not so much desirous of recording anything novel, as of asking a few questions concerning the interesting connexion which is sometimes found to subsist between the ants and Aphides. Were the two individuals which I found, located fortuitously among the ants, or had they been captured and confined in their nest purposely by those insects? It is well known that ants are very fond of the honey-dew excreted by Aphides, and will climb trees and plants to attend upon them and obtain it. Huber and others have also described how ants imprison Aphides in their nests, which they regularly milk, and whose eggs they take the greatest care of. But the honey-dew has always been thought to be excreted by the anal tubercles, of which the species found by myself were entirely destitute; I therefore doubt whether they had any connexion with the ants among which they were found. Many species of Aphides live on the sap contained in the roots of plants; it is therefore easy to suppose that they may occasionally be found beneath stones in shrubby or grassy places, and that they may find their way also into a colony of ants, without having been purposely conveyed there by the latter insects.—*Id.*

Stratagem of a Spider.—The interesting account of a spider cited by Mr. Norman (Zool. 3152), reminds me of what I once saw at Lyme Regis, in Dorsetshire. During one of my rambles I saw in the corner of a field, where two ditches met, a pretty pink flower growing from the side of the ditch. On going nearer to the flower I discovered a very fine spider's web, about twenty inches square, so transparent that it was not perceptible except at a very short distance. A working moss-carder bee (*Apis muscorum*) made a dash at the flower, but unluckily entangled itself in the web; the spider advanced and retreated at least a dozen times, but was afraid to attack his formidable adversary. I waited some minutes, and saw that my poor friend was on the high-road to perishing from exhaustion, as he could not liberate himself. I therefore took him in my hand, and after some trouble released him from his most irksome situation, he

* 'Handbuch der Entomologie,' ii. 87. See also Amyot et Serville, 'Hist. Nat. des Hémiptères,' 613.

having rolled over and over in the beautiful web so as to render himself quite helpless. After I had cleared him from his entanglement, the bee commenced rubbing his face, and showing signs of gratitude for his deliverance ; and though I pulled him about very roughly, although the most irascible of the genus, he never once attempted to sting me, and when recovered he flew away, taking a long look at his deliverer. The manner in which this spider's web was placed, with the flower for a *decoy*, was beautiful, and the exquisite fineness of its texture, made to avoid observation, quite wonderful. I laid hold of the spider, but he escaped out of my hands into the long grass in the shape of a small round ball.—*H. W. Newman ; July 15, 1851.*

Notes on Observations in Natural History during a Tour in Norway.

By the Rev. ALFRED CHARLES SMITH, M.A.

(Continued from page 3193).

THE Elk (*Cervus Alces*) is a most ungainly-looking animal. Long-legged, very high-shouldered, large-footed, with a neck very short and a head very large, and its upper lip projecting and very thick, it is the most awkward creature imaginable, and seems scarcely to belong to the usually elegant and light family of which it forms a part. In size it exceeds a horse, sometimes reaching as much as seven feet in height. Its horns, though not long, are very thick, flat, and heavy ; indeed the animal must require its thick short neck, and strong, ugly, large head, to support so ponderous a weight. A pair which I brought home with me were enormously heavy ; and with these broad palmated horns the elk throws back the snow in searching for food. This animal is by no means numerous in Norway, and a few years since seemed likely to be exterminated ; but the government, anxious to preserve so noble a species of game, passed some very stringent laws for its preservation, imposing a very heavy fine on those who should violate them ; and since that time it has increased considerably in number. The forests of the Glommen are said to be peculiarly favoured by their presence ; and I can bear witness to the truth of this, from the number of heads I saw nailed up over the farm-houses in this district : it being a regular custom in Norway for the successful sportsman to nail up over the door of his dwelling-house such trophies of the chase as he may have gained in hunting, just as game-keepers in England nail stoats, weasels, hawks, owls, jays, &c., to the barn which forms their museum. In the Fille-fjeld and in Romsdal, the skulls of bears grinned in a ghastly manner from many a bonder's house, bearing evident proof that there bears abounded : in other parts, the heads and antlers of

reindeer to be seen over the doors, showed that they were the more profitable as well as less dangerous victims of the huntsman's rifle; while here and there a wolf's grisly head told tales of an attack on the sheep-fold: and here, in the Glommen, the long quaint head of the elk reminded us that we were in their especial district. An intelligent farmer in this valley assured me he had killed two of these scarce animals within so many weeks; and promised to show me some sport if I would make a hunting expedition with him, an offer I was most reluctant to decline; but the day of my departure from the country was at hand, and I was compelled to push on for Christiania.

The elk prefers the forest for his abode, and seldom leaves it for the open country. He is very timid, and consequently very difficult to approach; and he has the finest possible sense of hearing, seeing and smelling, as indeed he might be expected to have, with ears and eyes so large and nose so prominent: and away he goes, crashing along through the trees of the forest in his enormous strength, and with his large awkward body, the instant his acute ears or eyes or nose give him warning that danger is at hand.

The Wolf, (*Canis Lupus*). Strong, blood-thirsty, and cowardly seem to be the characteristic epithets applied to the wolf. He is rarely if ever seen in the summer, during which time he remains in the depths of the boundless forests, or in the heart of the mountains: but when the snows and frosts of the long Scandinavian winter wrap everything in their icy mantle, the wolves too, becoming white or nearly so, and rendered bold by starvation, band together in packs and venture to the homesteads of the peasants, and even into the very villages, in search of prey. During this season they are a great terror to the farmer, and sometimes even to the traveller; and many are the fearful tales told of the pursuit of sledges for miles by a pack of wolves; and many the hair-breadth escapes; and many, alas! the horrible deaths from these blood-thirsty and cruel marauders. One means of escape recommended to the luckless traveller, should he be so unfortunate as to be pursued by these savage beasts, is to trail a long rope behind the sledge; and so innate is cowardice in the wolf, that the oscillating movement of the rope, as it is dragged along the ground, has been found sufficient to deter the whole pack from venturing to approach the dreaded cord. Another effective means of escape is to shoot the foremost of the pack; for the wolves will invariably stop in the midst of their chase to devour their dead, dying, or wounded comrade, and the traveller takes advantage of this delay to press forward to a place of safety. But unless near to some village or

farm where sufficient help can be obtained, he has little chance of escape from the most horrible of deaths, should the wolves pursue him on his journey. So fierce, savage, and destructive, the wolf has no claims upon the forbearance of man: he has none of the noble courage and intrepidity of the bear; but unless urged on by dire hunger (which changes his everyday nature) and backed up by numbers, he will fly or rather skulk from the presence of man: though were his boldness equal to his cruelty and strength, the destruction caused by him would know no bounds. There are no warmer furs than the winter skins of the wolves, and for their sake, as well as to rid themselves of such savage foes, the inhabitants attack them whenever an opportunity presents itself. In a letter lately received from a Norwegian friend to whom I had sent an English setter, he says: — "I am especially delighted with the dog you have sent me, as I lost my best hound most miserably last winter. I was shooting black-cock in the forest, when on a sudden I heard a piercing yell; I at once guessed the cause and hurried to the spot whence the sound came, and there I saw my poor dog in the fangs of a wolf. I managed to kill the wolf, but the dog was so severely wounded, that I was obliged to shoot him too on the spot." Such are the vicissitudes to which the Norwegian sportsman is constantly exposed.

The Glutton (*Ursus Gulo*). In addition to those I have mentioned, Norway numbers amongst its quadrupeds the cruel glutton, which, concealing itself in a tree, and lying along an overhanging branch, drops upon the back of some unhappy animal passing below, and sucks its blood until it falls from exhaustion. Though no larger than the badger, the glutton is said in this manner to destroy reindeer and horses and the largest animals of the North.

The Common Lynx, (*Felis Lynx*). What I have said of the manner in which the glutton takes its prey, refers no less to another fierce inhabitant of Norway, the common lynx; which, vigilant and active, adopts the same method of lying in ambush in a tree, and leaping on the back of some unsuspecting victim, as he wanders beneath: but the lynx also condescends to hunt in open field, and prey upon such lemmings, ermines, squirrels, &c., as he can catch in open chase or by stratagem.

The Beaver, (*Castor fiber*). It is not only the cruel and the blood-thirsty, as those animals I have last described, that are to be met with in Norway; there too may be seen occasionally the sagacious, sociable, water-loving beavers, building their huts, and making their dikes, and astonishing man by their intelligence and skill. But I could not

learn that they were numerous, or that they were to be found except in the most northern and wilder parts of the country.

The Salmon, (*Salmo Salar*). I know nothing of the natural history of fishes, and am no fisherman; and with the exception of a great number of small trout, weighing from a quarter to three quarters of a pound, or perhaps a pound, which I caught for the sake of having something to eat, and one very small salmon, which I caught by accident, I did not take advantage in this respect of my tour to this, the best country in the world for the angler. I don't doubt that I shall be thoroughly despised by the disciples of honest old Izaak Walton, for throwing away such golden opportunities, however, be that as it may, such is the fact: and therefore all I say about the fishing of Norway is not derived from personal experience, but from Norwegian friends, or those Englishmen whom I met either at their fishing-stations, or returning from the more northerly ones, which are the best. The great salmon-streams of Norway are the Namsen and the Alten; the great majority of the rivers of Norway offering no accommodation to those fish, as in that rocky country of precipices there is sure to be some great fall near the mouths of the rivers, presenting an insurmountable obstacle to the source-seeking propensities of the salmon. Still there are very many salmon-streams, and the weight of fish caught by a successful angler in Norway in a single day was quite astounding to my mind, so unconscious of the gentle art. However, salmon-fishing in Norway is by no means that gentle, calm, quiet amusement, which seems to give angling so great a charm in the eyes of some of the lazy *dolce-far-niente*-loving gentlemen of this country. There it is really hard work, and requires a strong arm and a steady hand, as well as considerable skill and adroitness; for the salmon in Norway are none of your dull, feeble, passive, resistless fish, yielding themselves to an adverse fate when hooked, and suffering themselves without a splash to be towed to land and deposited on the grass; but they are strong, sturdy, independent fellows, like the Norwegians themselves, and when they find themselves deceived and in danger from an enemy, make such a splutter and commotion as shows their spirit is up, and that they are determined on a bold resistance and a fight to the last. And their resolute bearing and expert manœuvres to free themselves by sudden jerks or by main strength, often try to the utmost the skill of the angler and the strength of his tackle, and not un-

frequently leave him discomfited on the rocks, while they swim away with a glorious but most inconvenient palm of victory, a large hook in their mouths, and part of a line dangling therefrom. Moreover, the rivers in Norway are none of your still, quiet, smooth streams, gently meandering through flat grassy meadows; but good, honest, hearty torrents, roaring and foaming among the rocks with a deafening noise, plunging and hissing in their mad career, tossing the spray on high, eddying round and round, and playing all kinds of gambols in their frantic excitement to reach the fjords. In truth, salmon-fishing in Norway is no child's play; but to give some idea of the quantity and weight caught, it will be necessary to come to statistics. Two Englishmen, whom I met at their fishing-station, told me they had killed 1,500 lbs. weight of salmon in thirteen days: four of the fish weighed above 30 lbs. each, their weight respectively being 34, 35, 37 and 38 lbs. One of them going out alone killed in one day seven salmon, not one of which was under 20 lbs., their united weight being 160 lbs. But the sport of the Namsen far exceeds this: one Englishman killed no less than 2,000 lbs. weight of salmon last season. This same gentleman, a very expert angler, killed four fish, whose weight exceeded 30 lbs., one of them being no less than 48 lbs. in weight. I believe the largest fish ever known to have been killed in Norway, was one of 52 lbs., taken in the Namsen. But I see it stated that in Sweden Sir H. Parker outdid this, by killing one of 60 lbs. weight.

Salmon, as may be supposed from what I have said, forms a very great article of food to the Norwegians: indeed "Lacks," or salmon, as regularly makes its appearance at "frokost" (breakfast), "middag's-speise" (*déjeuner à la fourchette*), and "aftens" (or supper), the three Norwegian meals, as bread would do in this or any other civilized country. But then the "Lacks" one sees there so constantly is not what the English gourmand would picture to himself: the fish indeed is the very finest and best that can be had, but it is dried in the sun when caught, and never sees a fire, but when required is cut up in slices and served up quite raw. This, indeed, is the manner in which all meat is prepared for the table: meat is killed in October, and never at any other time of the year, (I allude now to the country, not to the towns, where fresh meat can always be obtained). In the month of October, then, a great slaughter of cows, sheep, goats, &c., takes place throughout the country; all the meat is dried and stored away, and lasts the entire twelve-month, and when wanted, is merely sliced off in shavings, and eaten in its raw state. These meats resemble mahogany in colour, but in

taste they are too rank for description, and an Englishman would starve before he could persuade himself to swallow such strong, tainted, tal-low-like, raw meat.

Since writing the above account of the salmon, two friends of mine have started for the Tana, at the extreme north of Norway, a river scarcely known, but reported to abound with fish. They have taken with them a tent, and all the apparatus necessary for an encampment of six weeks in that wild spot, depending chiefly on their rods and their guns for a supply of provision. Their intention was to proceed at once to the North Cape, and thence to strike across to the Tana, with horses and men to carry the tent and baggage. I trust I may be able to communicate to the 'Zoologist' the result of this enterprising expedition, and any zoological observations they may make in those little-explored latitudes.

The Trout, (*Salmo Fario*). Every stream, every torrent, every lake, even every ditch in Norway, seems to abound with trout, generally speaking of a very small size; still these little mountain trout are very delicious, and being so abundant, enable one to procure a dinner in a short time, a point of no slight importance in a hungry country such as Norway. But though usually so small, sometimes trout are taken there of enormous weight. A Norwegian naval officer, with whom I was slightly acquainted, assured me that he had himself seen a trout taken in the river Logen, near the cataract called Hünne-foss, which exceeded 40 English pounds in weight: and others have mentioned instances similar to this.

When I was following the course of that glorious river, the Glommen (the largest river in Norway), for a hundred and fifty miles, I learned that the method adopted there in taking fish is to spear them at night by torch-light, a very curious and most picturesque sight, which I was unfortunately too early in the season to witness, but which I well recollect having admired in the Bay of Naples, when in the beautiful cloudless starry nights of that glorious climate, the blue waters of the Mediterranean were illumined here and there with the glowing pan of charcoal placed on the edge of the fishing-smack, and luring the unhappy fish to destruction, just as a candle proves a never-failing attraction to the moth.

The Great Sea-serpent.—Being in the country of the renowned Bishop Pontoppidan, and in the fjords which are generally claimed as the home, or, at any rate, as one of the habitations of the sea-serpent, whose existence seems yet to be a disputed point in England, I lost no opportunity of making inquiries of all I could see as to the

general belief in the country regarding the animal in question: but all (with one single exception), naval officers, sailors, boatmen and fishermen, concurred in affirming most positively that such an animal did exist, and had been repeatedly seen off their coasts and in their fjords, though I was never fortunate enough to meet a man who could boast of having seen him with his own eyes. All however agreed in unhesitating belief as to his existence and frequent appearance, and all seemed to marvel very much at the scepticism of the English, for refusing credence to what to the minds of the Norwegians seemed so incontrovertible. The single exception to which I have alluded was a Norwegian officer, who ridiculed what he called the credulity or gullibility of his countrymen; though I am bound to add my belief, that he did this, not from any decided opinion of his own, but to make a show of superior shrewdness in the eyes of an Englishman, who, he at once concluded, must undoubtedly disbelieve the existence of the marine monster. That Englishman, however, certainly partakes of the credulity of the Northmen, and cannot withhold his belief in the existence of some huge inhabitant of those northern seas, when, to his mind, the fact of his existence has been so clearly proved by numerous eye-witnesses, many of whom were too intelligent to be deceived, and too honest to be doubted.

The Porpoise, (*Phocæna communis*). The seas and fjords which so bound and intersect Norway, seem full of strange monsters. On all sides one may see porpoises rolling and gambolling and tumbling over in the sea, and well are they denominated "nise" by the Norwegians, which word means originally "hobgoblin;" for their antics are strange indeed: and often have I watched with admiration the rollickings of these unwieldy fellows, who find their way to the heads of the fjords, sometimes a hundred miles from the open sea. Once when steaming down the Fjord of Christiania, the ship seemed surrounded by enormous monsters of this kind, but whether they were porpoises or dolphins, or the smaller species of whale, I cannot say.

In the Christiania Fjord, too, the clear transparent water seemed full of a species of jelly-fish, which, seen from the bow of the ship, looked exactly like slices of lemon, but as the water dashed from the keel disturbed them, shut up immediately like a hollow bag, and then resembled hyacinth-bulbs in a glass of water, with their long roots depending all around. But I feel that I am getting out of my depth; and indeed to describe the wonders of the fjord, into whose unfathomable depths, the intense clearness of the water enables one to gaze,—to describe the inhabitants of those waters, the strange quaint uncouth—

looking fish which were exposed for sale in the fish-market at Christiania, such as I had never seen before, — to speak of these and other rare curiosities of those inland seas, whose salt waters are frozen during so many months, would require the knowledge and the pen of a Yarrell ; and so I close my account of the fish and fishing of Norway.

ALFRED CHARLES SMITH.

Old Park, Devizes, July 24, 1851.

(To be continued).

*Extracts from the Correspondence of Mr. H. W. Bates, now forming
Entomological Collections in South America.*

(Continued from page 3144).

Parà, April 30, 1851.

I arrived in this city on the 19th instant, having left Ega on the 1st of March, a rapid passage down the current of the Amazons, being now the season of full waters. Your letter of October 3, 1850, wherein you acknowledge the receipt of my first Ega collection of two boxes, I received at the ' Barra,' coming down ; and another of January 8, 1851, I received here. I am very glad to see that my collections have sold remarkably well, and feel *very much* the compliment Mr. Hewitson has paid me, in naming the new *Callithea* after me. I am convinced that I could not have done a great deal more in Entomology at Ega, if I had staid there longer, although a few more new *Nymphalidæ* might have turned up when the river falls again ; but a good picking might be had in St. Paul's, further up the river ; and there must be quite different ground higher up, within the Peruvian frontier. None of the branch rivers are very practicable from the Solimoens, none of them having white settlements, and all the Indian savages being more or less enemies to white men. I hope you received the fine collection I sent from Ega January 2nd, which went from here in March. I have now about 1600, chiefly *Coleoptera*, taken since January at Ega, which I could not possibly get ready to go by the present vessel, although I worked hard the last two days, having been all the other days since I landed very much delayed in getting a house. However, there sails a vessel for London in about ten days, the ' Princess Royal,' by which I will send them. You will see how few I took of *Callithea Batesii* ; I have one more with me : it is

very rare at Ega, and found chiefly round solitary houses in the forest; it flies slowly, and settles upon the leaves of trees with wings closed. *Callithea Sapphira* seems peculiar to Santarem; I have not taken it. *C. Laprieurii* was common at Obydos in November, 1849. Besides the *Callithea*, there must be many new species in the *Nymphalidæ* and *Papilionidæ* taken at Ega; I numbered 124 species of *Diurnes* taken new to me, and now number 922 species taken by me in the province.

I wrote to you accompanying the January collection, saying I was coming home. It was chiefly from a desire to please my father, who wishes me to return; but after receiving your last letter, I have thought more seriously about it, and shall consider the matter before I leave Pará. The Rio Negro is the only very practicable river-branch of the Amazons, having many turns right away to Venezuela, and pretty frequent conveyances; the rest are all savage countries, the best being the Tapajos from Santarem. I made inquiries at Santarem coming down, and find there are no serious obstacles, either from unhealthiness or ill-disposed Indians, on the Tapajos and white settlements to 151 miles from Santarem. Between this and the sailing of the 'Princess Royal' I will consider it, as I am now all in confusion, with my new house, &c.; meantime I will see to preparing here a few chests of botanical curiosities, young palms dried, curious fruits, &c. There is also a good picking yet of insects here. A German, whom I had taught at Carepe, has collected and sold to an American merchant here about 4000 specimens of *Coleoptera*, amongst which I see fifty-five species of *Longicornes* alone new to me; they are however all falling to pieces by the *Dermestes*, from being kept in open lath boxes. Mr. Hewitson will see in the last collection a short series of the *Heliconia*-like *Papilio*; it is found at the edge of the water in the lake of Ega, when the river is falling. I assure you I took all I could of this, the *Callithea*, and other rarer *Diurnes*, when I was there. I could have taken more of some species, of which you will see full series; and perhaps, if I had known positively that the *Callithea*, was a *Batesii*, I might have made greater efforts to have taken more. For this reason, you had better give me the names and numbers of all the species, common and rare, with advice to each, the numbers according to my private specimens of each kind, as I can always recognize them by my note-book.

Carabidæ are still very rare; there are really very few in this region, being all a dead flat from Pará to Ega, the only hilly country is about Monte Alegria and Santarem; the Amazonian valley there is much narrower than further up. From the chain of mountains of Monte

Alegra to the hills behind Santarem, it is probably thirteen or fifteen miles in direct width, but at Ega the valley is doubtless more than a hundred miles broad. Up the Rio Negro you have six weeks' voyage before reaching the mountainous country; and up the Jurna to the south, people go up two months, and find no particularly high land; it is one vast flat of unbroken, lofty, and entangled forest. There are no Cetoniæ, except a few very rare Gymnetes; very few Buprestidæ and Cleridæ. You would see a fine series of Megacephalus Klugii, and a few other species, in my last. I have now no more of them.

I will prepare some kind of descriptive articles for the 'Zoologist,' and send in my next. My great objection is, that I cannot mention any animal, or insect, or plant, under a name by which it will be recognized; but I have some interesting notes on hunting turtles, &c.

The yellow fever has now disappeared here. I am still in excellent health, and ready for any kind of sport you could mention.

HENRY W. BATES.

On the Habits and Instincts of Birds.—Birds are fond of building their nests near the habitations of man, from a dread of vermin and birds of prey; these last include not only hawks, but many others not reckoned in that category. Partridges and pheasants constantly have their nests close to foot-paths and roads—even the railroads are not exempt from their visits, they having been hatched within a foot of the very rails. The notes of alarm of birds are easily known; I hear the thrushes in my shrubberies often give them, and am sure to find a cat, a hawk, or a stoat near. The same with the little wren; she is always ready to announce the approach of a stoat or any other enemy: so does the wary blackbird. When hunting in large covers, I have frequently been warned of the unkennelling of a fox long before the hounds challenged, by the "Skirr rick a dick dick" of the watchful magpie. I forgot to mention another anecdote of rooks. I lived many years at Clifton, near the far-famed St. Vincent's Rocks. There is a large rookery at Ashton Court, Somersetshire, "as the crow flies" about a mile and a half distant. A portion of these rooks have invariably gone out to feed on the Gloucestershire side of the river for the last forty years, and still do so. I have no doubt these rooks which cross the Avon, are descendants of some which formerly were bred at Stoke (the Duke of Beaufort's), in Gloucestershire, where there is another rookery still. These rooks may be seen to this day, going and returning, mornings and evenings, as regularly as possible. I remember a severe frost, when a sort of sleet fell, and froze the wings of many birds so that they were taken alive with the hand. White mentions this to have happened in 1763. At Jersey they seldom have any severe frost; but about ten years ago a sharp frost came on, such as the oldest inhabitant had never seen there. Several birds were frozen to death while at roost, and one in particular was found inclosed in a sort of icicle, like a small lamp or cage, caused by its breath previously to death; it was quite stiff, and the twig of a tree surrounded by what I have described. For a couple of days at this time the roads were impassable from frozen rain. A gentleman who saw this bird festooned in its icy cage, said

it was one of the most beautiful things he ever saw. My late worthy friend and neighbour, Mr. Knapp, author of the 'Journal of a Naturalist,' was quite horrified at a price being put by churchwardens on the heads of tomtits; but I can answer for the large black-headed tomtit being a mischievous bird. When food gets scarce in November, he commences gnawing at the entrance of the straw bee-hives, and the moment a bee makes its appearance, flies off with it to the nearest tree and devours it piecemeal. In cold weather the tomtit continues this practice from November until March: and in Hampshire the common people have designated this bird the "bee-eater." I have never observed the *Parus major*, or large tomtit, do this during the summer months; it is generally confined to three or four months in winter. It is beautiful to see the wonderful instinct of birds in the preservation of their young; I have seen a partridge decoy a dog four or five hundred yards from her brood, pretending all the while to be disabled. One of your correspondents mentions that he saw a rook destroy some young sparrows, it might have been a carrion crow. But gamekeepers of great experience have told me that in very dry seasons, like 1844, when there was little food for the rooks, many of the young ones died from hunger; in that year, the rooks attacked the nests of pheasants and destroyed the eggs, for want of moisture. — *H. W. Newman; New House, Stroud, July 18, 1851.*

Occurrence of the Jer Falcon at Mayfield, Sussex. — I have obtained an immature specimen of this bird, shot at the above place during the severe month of January, in 1845. — *J. B. Ellman; Lewes, August 8, 1851.*

Regularity in the Movements of the Barn Owl, (Strix flammea). — In the beginning of July last year I was much interested in watching the flights of a common owl, which flew across the lawn every evening. This owl was punctuality itself; when the clock was at five-and-twenty minutes past 8, I used to go to the window, and was sure to see him before two minutes were over. Not only was this bird remarkable for its punctuality, but also for a most extraordinary regularity in its movements; I always saw it first flying through two elms at the bottom of a field in front of the lawn, (I suppose that it came down from the wood above); then it swept close to the ground across the field, and rising into the air as it passed the corner of the lawn, after flying over a small plantation, it again dropped, and skimmed beneath the apple-trees in an orchard, when, having come to its journey's end, it flew in at the window of a barn. For nearly three weeks, night after night, these movements were repeated, the owl always flying through exactly the same trees, and falling at exactly the same places. — *A. M. Norman; Eglesfield House, Yatton, Somerset.*

Golden Oriole. — A specimen of the golden oriole (an adult female) was killed near Bungay during the month of July. — *J. H. Gurney; Easton, Norfolk, August 4, 1851.*

The Rose-coloured Pastor (Pastor roseus) in Suffolk. — A fine adult male specimen of the rose-coloured pastor was killed at Lound, near Lowestoft, about a week since. — *Id.; June 13, 1851.*

The Rose-coloured Pastor in Devonshire. — A beautiful specimen of this rare British visitor was shot at Chudleigh on the 18th instant, and may now be seen by the lovers of ornithology, at *Mr. Truscott's, Bird-stuffer, North Street, Exeter.*

Occurrence of the Rose-coloured Pastor &c., at Berry Head, Devon. — I ought to have made known to you before this, that I had a very beautiful female specimen of the rose-coloured pastor brought to me to be preserved, which was shot at Berry-head on the 12th of June last, by a servant of the Rev. Mr. Hogg: and about the same time of the year in 1845, I also preserved a beautiful male specimen, shot near

the same spot by Farnham Lyte, Esq., of Berry-head, Brixham. The latter bird I saw a fortnight ago, looking as fresh and bright as ever, of a deep salmon-colour and purple, with a magnificent crest. I do not know if this bird was recorded in your 'Zoologist' or not. The female I found to be full of eggs. It might not perhaps be out of place to inform you that I have most seasons one, two, or three specimens of the black redstart brought to me; these birds are found round the coast from Berry-head to Teignmouth. I have had them from the former place, from Goodington Sands, Babbicombe, Watcombe, and Teignmouth: and in your February number you will find a pair mentioned as having been shot at Teignmouth, [? Lewes]. Within the last twelve months I have had the common buzzard (common here), the hobby, the female hen harrier, the great spotted woodpecker, the gray phalarope, the ringed or bridled guillemot, the red-throated diver, the young of the black diver, and the young of the Iceland gull.—*E. Burt; the Museum, Torquay, August 12, 1851.*

Occurrence of the Crane at Pevensey, Sussex.—I have recently obtained a male specimen of this scarce bird, which was shot at the above place in May, 1849.—*J. B. Ellman; Lewes, August 9, 1851.*

Remarks on the Swan.—In your August number (Zool. 3208) is an article about the common swan, and stating the number of cygnets which it produces to be "five, and more generally from two to four." I have at this time a brood of eight young ones, which are now nearly as large as the old birds, and which I shall soon shut up, and fatten for the autumn. The whole brood were frequently seen on the old mother's back, until they became too heavy for her to carry, and they had gained strength to swim about without fatigue. Eight is by no means unusual for this stream (the Wandle), and that number has frequently been bred on this property. In Beddington Park, last year, there was a brood of twelve, all of which, I believe, came to maturity.—*Samuel Gurney, jun.; Carshalton, August 4, 1851.*

Remarks on the Egyptian Goose.—In your July number (Zool. 3175) I observe some remarks on two Egyptian geese being shot in a wild state near Yarmouth, and another on Derwent Lake. Is it not more probable that they were birds which had bred in a state of domestication, and not having been pinioned, had flown away? My reasons for suspecting this to be the case are, that when at Alnwick Castle in the spring, I saw a pair of Egyptian geese, which I was told had flown away, and after being absent, I believe for two years, they had returned with a brood of young ones. Again; I have a pair of them, which I have had for four or five years, and which have bred every year. I only succeeded in bringing up one the first season, which was not pinioned, and which took flight regularly every morning, not returning for two or three hours, and it was eventually shot. This year I have hatched eleven young ones, by taking the first and second layings and putting them under a hen, when the female laid again, and hatched seven young ones from as many eggs. The old ones are of a most ferocious disposition, from the time of their nesting until the young ones are taken away; so much so that my man declares he saw the male attack one of the old swans, which he held by the neck, and would have killed if he had not separated them. They are perfectly hardy, and require no particular care in rearing them. They are not pleasant near a house, as their noise is very loud and continuous in the night, so much so that my neighbours have had to complain to me more than once, and I now keep them in a pond surrounded with wire netting.—*Id.*

Occurrence of the Greater Shearwater (Puffinus cinereus) at Lynn.—An example of this rare bird was caught on the 25th of July last by some of our fishermen, who

found it asleep upon the water in the lower part of our river—the Ouse. They struck it with an oar, and afterwards succeeded in taking it alive. A friend of mine bought it, and kept it alive until the 30th, when it died from the effects of the blow with the oar. He fed it upon fresh beef and small sprats, which it readily devoured. It slept and rested during the day, but in the evening it became more active and lively. On dissection it proved to be a male. It measured 17 inches in length: wing from anterior joint 12 inches, from tip to tip 3 feet 6 inches: whole length of the bill 2 inches, from tip to the gape $2\frac{1}{4}$ inches, tubular portion $\frac{2}{3}$ of an inch: tarsus 2 inches: middle toe, including the claw, $2\frac{1}{2}$ inches: web extending to the extremity of the anterior toes: the posterior toe rudimentary. Colour of the bill dark brown, under mandible lighter at the base: irides dark brown: top of the head, neck and back dark clove-brown, margins of the feathers on the back darker: throat light ash-gray, darkening on the sides and softening into the brown of the head: scapulars brown, the margins lighter; tertiaries brown, the stems darker; wing-coverts blackish brown; primaries blackish brown, the stems nearly black, inner web lighter than the outer: tail-feathers dark brown: breast and belly dark ash-gray: legs brown, toes and membranes lighter. In all probability this was a young bird of the last year's hatch, in the plumage resembling its maternal parent. Upon comparing this with the descriptions given by Yarrell of the two birds figured and described by him, it will appear that the difference of plumage manifested by this example from that of Yarrell's darker bird, is owing to the progress it has made towards the assumption of its adult plumage.—*Edwd. L. King; Lynn, August 18, 1851.*

Note on the Gull-billed Tern.—I have lately seen a fine adult male specimen of the gull-billed tern, in full summer plumage, which was killed at Yarmouth in the early part of July. The frequent occurrence of this species during the last two or three years in the above locality, would seem to indicate that it is a commoner species than has been supposed; probably it is often mistaken for its near congener, the Sandwich tern.—*J. H. Gurney; Easton, Norfolk, August 4, 1851.*

Occurrence of the Caspian Tern at Yarmouth.—A fine adult male specimen of the Caspian tern, in full summer plumage, was shot at Yarmouth about a week since.—*Id.; August 21, 1851.*

The Museum Catalogue of British Lepidoptera.—I do not think I can possibly allow Mr. Stephens' remarks upon my article on the Museum Catalogue (Zool. 3161) to pass quite unnoticed, although I have no wish to say any more on the subject. My sole object was to show that the sections into which Hübner has divided the Lepidoptera in the 'Verzeichniss,' could not be adopted as genera. To this work, and to this only, I referred; and I still adhere to the opinion that these sections, founded only upon colour and markings, are not genera at all. In several instances a variety is placed in a different *coitus* from the typical insect. The well-known *Papilio Turnus* of North America is placed in *coitus* Jasoniades, along with *Machaon*, *Xuthus*, &c.; while the suffused variety of the female (*Glaucus* of Linnæus) is associated with *Troilus*, *Asterias*, &c., in *coitus* Euphocades. That in some few instances the species placed in a *coitus* by Hübner form a natural genus, I fully admit; but this has arisen from these species closely resembling each other in colour and markings, and had a *Bombyx* been found resembling a *Noctua* in these respects, it would doubtless have

been associated with it: in fact, Hübner has done this, as I have previously stated,—*Coryli*, a genuine Bombyx, and *Scoriacea*, a Noctua, forming his *coitus* Colocasia. Some parts of Mr. Stephens' communication I do not understand, and therefore cannot reply to them. The allusion to the genus *Nonagria* appears to me to prove nothing more than that Haworth and others did not know genuine Noctuæ from Tortrices and Tineæ; and however widely the species have been separated by authors, it is clear that Mr. Stephens coincides in my views, as he has followed me with the exception of subdividing my genus *Nonagria* into two or three others. In the 'Illustrations,' *flammea* and *Ulvæ* were placed among the Tineæ, but in the Museum Catalogue they are removed, and very properly, to the family *Nonagridi*, being true Noctuæ. I admit that the genus *Chersotis* is not a very natural one; but I think that *Agathina* is far more closely allied to *Porphyrea* than it is to *umbrosa*, with which it is associated by Mr. Stephens, and which it resembles in nothing, either in the larva or perfect state. With regard to *Maura* and *Typica*, I may say that if there is any madness in the case it must be in placing the former in the family *Catocalidi*, with which, as Boisduval justly remarks, it has nothing in common, excepting the large size of the perfect insect, and the mealy appearance of the pupa. The larvæ of the *Catocalæ* are very much elongated, flattened, attenuated at each extremity, and fringed laterally with hairs; they conceal themselves during the day in crevices of the bark of the trees upon which they feed. The larva of *Maura*, on the contrary, is short, fleshy, and incrassated posteriorly, closely resembling that of *typica*, concealing itself underground in the day-time, and feeding at night upon low-growing plants, forming a cocoon on the surface of the earth when about to assume the pupa state. If *Maura* is associated with any species it must be with *typica*, to which it is more nearly allied than to any other European species. Mr. Stephens having mentioned the genera above alluded to, as a proof that many of those in my list are no better than Hübner's, I felt compelled to say a few words in my own defence. I will not enter into the charges against my friend Guenée, further than to say that he expressed his regret at having been unable to obtain a sight of Haworth's '*Lepidoptera Britannica*' previously to the publication of his Catalogue, as he would have been glad to have quoted it for every one of the species. I have since procured him a copy, and also sent him Mr. Stephens' fourth volume, one great defect of which is the impossibility of knowing which of the descriptions are original and which are taken from other authors; in several instances the borrowed descriptions not applying to the insect intended by Mr. Stephens. In conclusion, I may say that I am confident that neither M. Guenée nor any of the French naturalists have ever intentionally slighted what has been done in Britain; and I am sure I have ever received the greatest attention and kindness from them.—*Henry Doubleday; Epping, August 6, 1851.*

Note on the Scarcity of Insects.—I can most fully confirm the observations of Mr. H. W. Newman on the scarcity of queen wasps this year, (Zool. 3185). Up to the time of his writing the note which appeared in the '*Zoologist*' for August, and indeed until a month ago, I had hardly seen a wasp, and consequently expected that we should have but very few; they are now, however, on the contrary, very numerous, devouring all our wall-fruit, and filling the rooms directly the windows are opened. It is a curious fact, that occasionally when queen wasps have been unusually numerous in the spring, and there is every reason to expect a great abundance of wasps, there are nevertheless very few in the autumn; while in other years, as is the case now, after having had apparently a great paucity of queens, wasps are very numerous.

There has been a most remarkable scarcity of all insects here this year; and where I used to find thousands last year, now hardly one is to be seen.—*A. M. Norman; Eglesfield House, Yatton, Somerset.*

Note on the Larvæ of Limenitis Sibylla and Camilla.—I have with much pleasure read the description of the larva of *Limenitis Sibylla* by Mr. John Hunter, in the August number, (*Zool.* 3185). Having frequently found this larva in Switzerland, as well as the imago, and that of the closely-allied *L. Camilla*, I subjoin the description of these two larvæ, for the confirmation of Mr. Hunter's description of that of *Sibylla*, and thinking he might like to compare the descriptions of the two larvæ. *L. Camilla* is, in Switzerland, by far the commonest insect of the two, and generally frequents gardens; whilst *L. Sibylla* confines itself to open places in woods and forests. The following description of *L. Sibylla* was made from larvæ found in the forest of Sauvabelin, Lausanne, on the 26th of May, 1844, feeding on *Lonicera Periclymenum*; it will also eat the leaves of *Lonicera Caprifolium*. It crawls by jerks, and is rather lazy and slow in its movements. Caterpillar bright green, covered with very small pale tuberculous spots, and two dorsal rows of brownish pink branched spines of unequal lengths, two on each segment, excepting the first and last, which have none: the largest are those of the second, third and fifth segments; the next in size those of the tenth and eleventh; and the smallest are those from the sixth to the ninth segments: the fourth segment has but two very small greenish spines. A pale yellowish white lateral line extends over the nine last segments, on which is placed, on each segment, a very small, pale, and semi-transparent branched spine, and between these and the dorsal spines are, on either side, a series of minute pale spines: there is also a small, pale, semi-transparent spine on either side of the second segment; also a brownish pink broad line over the prolegs, immediately beneath the lateral line. Stigmata just above the lateral line, and pale yellowish white, narrowly bordered by brownish pink. Head, light pinkish lilach, with a deep brownish pink streak on either side, and covered with short spines. Thoracic legs pale flesh-colour, with the base gray. Prolegs pale yellowish and shining. Abdomen pale bluish green, with a pale ventral line. *Limenitis Camilla.*—Description made from larvæ found at Cour sous Lausanne, on the 14th of June, 1845, feeding on *Lonicera Xylosteum*, but will also eat *Lonicera Caprifolium* and *Periclymenum*: habits as in the last species. Caterpillar thick and gibbous, with two rows of fleshy protuberances of a lilach colour, covered with small, stiff, yellowish hairs down the back, and two lateral rows of minute, fleshy, branched spines, of a pale yellowish colour: the two dorsal protuberances of the fifth segment are the largest. Ground colour livid green, inclining to yellowish on the sides, with a broad and pale yellow undefined lateral line on the eight posterior segments, and faint traces of pale oblique streaks along the sides. The seventh and eighth segments are a little tinged with lilach along the back. Abdomen pale lilach. Head bifid, of a light brown colour, with two black lines, forming a triangle towards the mandibles. Thoracic legs flesh-colour. Prolegs buff-colour. Stigmata pale brown, bordered by dark brown.—*H. L. de la Chaumette; Church-street, Stoke Newington, July 31, 1851.*

Erratum.—*Zool.* page 3159, line 28, for *Deilephila Elpenor*, read *D. Euphorbiæ*.

Proceedings of the Entomological Society.

August 4, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

Herr Herrich-Schæffer and Count Mniszeck were present as visitors.

The following donations were announced, and thanks ordered to be given to the donors thereof:—‘The Zoologist’ for August; by the Editor. ‘Entomologische Zeitung’ for June; by the Entomological Society of Stettin. ‘Isis, 1848, Heft xi.’; by Herr Koch. Lieut. Maury’s ‘Investigations of the Winds and Currents of the Sea,’ (from the Appendix to the ‘Washington Astronomical Observations for 1846’), with a map: Washington, 1851; by the Author. ‘Monographia Cassididarum,’ tom. i., auctore C. H. Boheman; by the Author. ‘Verslag van de Zesde Algemeene Verdragging der Nederlansche Entomologische Vereeniging;’ by the Netherlands Entomological Society. ‘Transactions of the Microscopical Society,’ vol.iii.parts 1 and 2; by the Society. ‘Additamenta ad Faunam Carcinologicam Africæ Occidentalis, scriptis J. A. Herklots;’ by the Author. A box of Brazilian Hemiptera; by M. de Gand. Specimens of *Apamea ophiogramma* and *Gelechia velocella*; by Mr. F. Grant. Two living specimens of *Chrysomela cerealis* from Llanberris; by Mr. Foxcroft. A nest of the spider, *Theridion variegatum* (T. callens, *Blackwell*); by Mr. Meade.

Mr. J. F. Stephens exhibited a series of varieties of *Abraxas Grossulariata*, caught by himself; some of the specimens being remarkable for variation in the form of the wings as well as the colours.

Mr. Bond exhibited a specimen of *Saturnia Carpini*, reared by Mr. Barlow, of Cambridge, in which the usual ocellus on the upper wings was replaced by a yellow dash; and the President observed that at least one of the veins was deficient.

He also exhibited some very remarkable varieties of *Harpalyce suffumata*, *Cidaria fluctuata*, *C. montanata*, *Boarmia rhomboidaria*, and *Spilosoma Menthrasti*, all taken near Leeds.

Mr. Bedell exhibited the following Micro-Lepidoptera, all taken near Mickleham on the 27th of July:—*Pempelia ornatella*, *Depressaria rotundella* and *D. Douglasella*, *Gelechia neuroptella*, *Pterophorus baliodactylus* and *P. didactylus*.

Mr. S. Stevens exhibited some splendid Coleoptera and Lepidoptera, received from Messrs. Wallace and Bates, and collected by them at Ega and Guia, on the Amazon. Among the Lepidoptera were several novelties, and a female of the butterfly of which Mr. Hewitson had lately described the male in this Society’s ‘Transactions,’ under the name of *Papilio Bolivar*. Mr. Stevens also exhibited some fine *Buprestidæ* from Swan River.

The President exhibited a living specimen of *Cerambyx Heros*, forwarded to him from Pembroke dock-yard by Sir T. Pasley; *Phibalocera quercana*, reared from larvæ living under a silken web on leaves of pear-trees, to which they had done much damage; *Plutella Cruciferarum*, reared from leaves of turnips, on which in many counties they had appeared in immense numbers, and caused great devastation; turnip-leaves, containing living larvæ, probably of the last-mentioned species, and others which had been forwarded to him, accompanied by specimens of *Crambus culmellus*, which were said to have caused the damage to the turnip-plants, but which was not probable; *Melizethes æneus*, seen eating pollen of roses; *Balaninus Brassicæ*, found gnawing the petals of roses; a monstrous claw of *Astacus fluviatilis*, with two horus instead of one; a nest of *Chelostoma florisomne*, with three cells, in a straw; and a species of *Astyages* from asparagus. He also distributed a number of *Coleophora Hemerobiella* and *C. nigricella*, reared from leaves of pear-trees.

Mr. Moore exhibited some Lepidoptera from Hastings, among which were *Sphaleroptera longana*, *Haw.*, and *Bryophila glandifera*.

Mr. Smith exhibited two specimens of the rare *Ctenicerus castaneus*, captured by the Rev. C. Kuper, in Monmouthshire.

Mr. Smith also exhibited a great number of Hymenoptera, which he had recently captured in the Isle of Wight; among them the following were the most remarkable. *Mutilla Ehippium* (male and female), *Larra unicolor*, *Philanthus triangulum* (hitherto exceedingly rare, but of which he took between 200 and 300), *Andrena nigriceps* (*Kirby*), *Panurgus calcaratus*, *Nomada varia* (*Kirby*), *Cœlioxys vectis* (*Curtis*), *Megachile maritima*, the very rare *Osmia xanthomelana*, an immense number of *Fœnus assectator*, and one specimen of a *Dasypoda*, probably a new species.

Mr. Smith stated that from the stem of dock exhibited by Mr. Douglas at the March meeting, containing larvæ then supposed to belong to *Cemonus* or *Pemphredon*, he had reared three specimens of *Hylæus*, of which two (males) were *H. plantaris*, *Smith* (Trans. Ent. Soc. iv. 32), and one (female) was *H. cornuta*, *Kirby*, *MSS.* (*Smith*, l. c.); thus leaving no doubt that these were but sexes of one species.

Mr. S. Stevens exhibited a quantity of insects, of all orders, part of a great mass he had brought from below Gravesend on the preceding day, when from 7 to 8, p. m., there were myriads on the grass, although at 5 o'clock scarcely any were visible. Among them he had already discovered a number of a species of *Haltica* new to him.

Mr. Waring exhibited two specimens of *Plusia orichalcea*, recently taken by Mr. Harding near Folkstone.

Mr. Augustus Sheppard exhibited specimens of *Tortrix transitana* from Fulham, *T. cinnamomeana* and *Dichelia Grotiana* from Weybridge, and two strongly-marked *Demas Coryli*, reared from larvæ.

Mr. Meade exhibited some cocoons of a *Coccus* found in May, from which a number of very minute insects, all alike, had escaped, and a sketch of which he exhibited.

The President said he thought the holes visible in the cocoons were not made by the *Cocci*, but by a parasite thereon, — *Coccophagus*; and he believed he perceived some of them among the *Cocci*.

Mr. Stainton exhibited the new species of *Lithocolletis*, recently described in the 'Entomologische Zeitung' by Herr Nicelli, under the name of *L. Coryli*; also the larvæ and pupæ in leaves of hazel.

Mr. Douglas exhibited *Gelechia Walkeriella*, from Dartford Heath; *Peronea aspersana*, with its pupa-skin, and *Sericoris conchana*, both reared from larvæ which fed on the leaves of *Spiræa Filipendula*; and a species of *Coleophora*, apparently undescribed, for which, if such should prove to be the case, he proposed the name of *Inulæ*, the larva having fed on leaves of *Inula dysenterica*.

The President read the following extracts from a letter he had received from I. P. Kirtland, Esq., M.D., Cleveland, Ohio, dated July 15, 1851: —

"In the 'Arcana Entomologica' it is stated, on the authority of Mr. Doubleday, that '*Papilio Ajax* is found chiefly in the lower country of the Southern States, east of the Alleghanies; its range is, I believe, from Virginia to Florida.' But this species has a more extensive range. At my residence on the south shore of Lake Erie, five miles west of Cleveland, it is not uncommon, and I have found it still more abundant at Columbus, near the centre of the State of Ohio. With us the larva feeds upon the foliage of the *Anona triloba*. This insect, in its various stages of metamorphosis is correctly figured in Leconte's *Boisduval's 'History of Lepidoptera.'*"

"The *P. Marcellus* is still more common in the same northern localities, and feeds upon the same shrub. It is also well figured in the work to which I have referred. The pupa-case is occasionally of a pea-green colour, and remains unchanged during the winter. In their perfect state these two species are readily recognized by their peculiar modes of flight, as well as difference in size and markings.

"*P. Asterias* in the larva state feeds on all species of *Umbelliferae*, not excepting *Cicuta virosa*, the most virulent of our vegetable poisons.

"*P. Philenor*, in the same state, confines itself to the several species of *Aristolochia*; *A. Serpentaria*, in this vicinity, constituting its principal food. It is badly coloured in Say's '*American Entomology*;' in *Boisduval* it is better, but far short of the original while living.

"You will perhaps be surprised to learn that *P. Cresphorites*, *Herbst.*, described and figured as *P. Thoas* in *Leconte's Boisduval*, has found its way as far north as my locality. In the August of last year I captured four beautiful specimens in my lawn. The present season two have already been seen here, and I have received one from the Scioto valley near Columbus. At the south it feeds on the orange trees; what its food is here I have not yet discovered. I do not think it has visited this section of the country till very recently.

"Among the most rare species which I have taken, are *Vanessa Milberti*, *Melitæa Phaeton*, *Xanthidia Nicippe*, and *Limenitis Arthemis*.

"It may interest you to learn the fact that three species of your English butterflies have become naturalized in this vicinity; viz., *Vanessa Antiopa*, *V. Atalanta*, and *Lycæna Phlæas*. All are now abundant. It is perhaps doubtful whether the last is specifically identical."

The President announced that Herr Herrich-Schæffer, having come into possession of the works of Hübner and Panzer, would dispose of copies, including the continuations, at greatly reduced prices; and that he would receive in exchange English entomological books and English and Foreign Lepidoptera. Also that he had for sale or exchange small collections of European Lepidoptera. He intended to terminate, during the ensuing winter, his works on the Lepidoptera of Europe; and for illustration therein, he begged the loan of new species, especially of extraordinary genera of Nocturnes; and promised to return them in good condition as soon as possible, and free of expense.

A MS. list of a collection of Lepidoptera and books for sale by Herr Koch, of Frankfurt, was on the table.—*J. W. D.*

Proceedings of the Society of British Entomologists.

August 5, 1851.—At this meeting the following insects, among many others, were exhibited:—

Heliothis Dipsacea, *Plusia orichalcea*, *Lozopera alternana*, *Cnephasia conspersana* and *Pterephorus monodactylus*, all taken on the Kentish coast, near Dover. *Xantho-setia Inopiana* and *Emmelesia heparata*, taken at Darenth. *Plinthus caliginosus*, near Dover.—*J. T. Norman.*

Note on the Sphinx Convolvuli.—About noon on Saturday, the 19th of July last, a Sphinx Convolvuli was given to me. It had just emerged from the chrysalis. For a few minutes it was very uneasy, until it had found a situation where it could hang vertically; and having attained that position it remained still. The wings, when first caught, were very short and rudimentary, measuring about three quarters of an inch; they exhibited no appearance of being folded, thick, or bulky. After it had been suspended for about half an hour, the wings had increased to the surprising size of about an inch and a half in length, and in width proportionally. They appeared then flimsy and uneven or puckered, their plane making with the plane of the body, that is, with the upper surface of it, an angle of about 30°. From the markings near the scapular joints and costal regions, it would appear that a considerable growing action had taken place in those parts, for they had become considerably altered. About two hours afterwards the wings became more firm and rigid, and had taken their proper position. The body had become much less in size, that is the abdominal portion. It remained very still throughout the day, until about half past eight o'clock, when it began to make use of its newly acquired organs; this habit it practised daily, during the short period I kept it alive. The mysterious rapidity with which the wings of this insect became developed, forms a wonderful and interesting passage in its history.—*Edwd. L. King; Lynn, August 18, 1851.*

Descriptions of Larvæ of Sphingidæ, with Occasional Notes on some of the Rarer European Species.—*Deilephila Tithymali*, *D. Zygothyli*, *D. Epilobii* and *D. Vespertilioides*, are all very scarce; I have only seen two of them as yet. *D. Vespertilio* I have never reared from the larva. There now remains one more of the *Deilephilæ* for me to describe, and that is *D. Hippophaës*.—Caterpillar elongated. Head globular and small. Horn small. The ground colour is dull glaucous sea-green, or grayish green, and covered with small round white spots, narrowly encircled with olive-green; a broad milk-white lateral line, along the upper edge of which are the stigmata; two longitudinal pale whitish yellow lines down the back, marked near each incision by a pale yellow spot, and terminating with the 10th segment at two long, oval-shaped patches, which join the base of the horn, the colour of these patches is light yellow-ochre, slightly bordered by brown. Horn slightly granulated, black above and light yellow-ochre beneath; a rather darker dorsal line. Stigmata yellow-ochre, bordered by dark brown. Abdomen very pale greenish white, and not spotted as the body. Thoracic legs very pale yellowish white, with the tip brown. Prolegs pale greenish white, and spotted as the rest of the body. Head and escutcheon pale grayish green; the two last segments not so much spotted as the others. Found near Lavey, in Switzerland, July 8, 1844, upon *Hippophaë rhamnoides*. Having now gone through the larvæ of the genus *Deilephila*, the next genus is *Sphinx*. To this belong the three species *S. Pinastri*, *S. Ligustri*, and *S. Convolvuli*; all of which I shall now describe. *Sphinx Pinastri*.—Caterpillar smooth and elongated. Anal horn slightly curved. Head round. Ground colour fine sap-green, wrinkled transversely with dark brown; a very broad pinkish gray dorsal line, somewhat dilated towards the posterior part of each segment, bordered by an interrupted whitish line, on either side of which is another whitish and rather interrupted longitudinal line; also an interrupted, pale yellow, lateral line, just below the stigmata, between which and the longitudinal whitish line above mentioned, is another irregular and macular ill-defined line. Abdomen green, wrinkled with black, and a patch of dull pinkish yellow in the middle of each segment; the stigmata orange-red, bordered by black. Head pale yellowish

brown, with two short and thick black dashes above, and streaked on the sides with brown, more or less dark. Mandibles shining brown. Horn black, and slightly granulated. Thoracic legs very pale straw-colour, and slightly tipped with light brown. Prolegs dull pinkish yellow, with two gray patches on each. Escutcheon dark shining brown, traversed by the four dorsal and longitudinal lines, which appear of a pale buff colour. Found in August and September on *Abies excelsa* and *Pinus sylvestris*.

Sphinx Ligustri.—Caterpillar elongated, smooth, of a brightly transparent green colour; seven oblique stripes on either side, from the 4th to the 10th segment, of which the anterior half is of a fine lilach, and the posterior half pure white, at the lower extremity of each of which is a succession of four or five small white spots. Horn light amber or grayish yellow, with a brown streak above, and slightly tipped with the same colour; sometimes it is of a light amber colour, with a deep black streak above, extending to the top, and having below a similar streak meeting it at the tip, but narrower. Stigmata pale orange. Head green, with a broad stripe on either side thereof, generally of a dark brown colour, but sometimes pale brown. Mandibles brown. Thoracic legs very pale flesh-colour, tipped with brown or black, and sometimes ringed with the same colour. Prolegs green, tipped with gray, and a small violet patch on each. Abdomen green. When in a state of repose, the larva generally contracts the three anterior segments and draws in its head, and at the same time they are raised in a singular position; the thoracic legs are then drawn together under the head. In the months of July, August and September, on *Ligustrum vulgare*, *Syringa Persica*, *S. vulgaris*, *Viburnum Opulus* and *V. Opulus roseum*.

Sphinx Convolvuli.—Caterpillar elongated. Head round. Anal horn curved backwards. Body wrinkled transversely. Colour extremely variable. Thoracic legs shining black. Stigmata black, with the interior orange-red, (lined with orange-red). The head has generally six broad, black, transversal stripes, three on either side, of which four only are generally visible, the other two are only to be seen when the head is stretched out; and two other black lines in the middle, meeting above so as to form a triangle. Mandibles black. Palpi whitish. The colour of the abdomen and membranous legs varies according to that of the body. The horn, in the dark individuals, is black and shining, but in the green ones it is generally reddish brown striped with black. Escutcheon small, and shining brown or green. In the colour and markings they vary very much, some are green, others gray, brown, &c. Some with oblique lateral stripes, others with longitudinal series of spots or patches, &c. Found during the months of July and August and beginning of September, on bindweeds, as *Convolvulus sepium* and *arvensis*.

Dusky varieties.—Dark olive-brown, more or less speckled with buff; a broad milk-white lateral line streaked with brown; two series of brownish yellow spots down the back, and two brownish yellow stripes on the anterior segment, in a line with them, more or less spotted with brownish yellow down the middle of the back.

Green varieties.—These are generally of a light yellowish green ground colour, some however are of a dark green. Generally with two series of black spots down the back, varying in size in different individuals; sometimes almost obsolete, sometimes joining one another, and thus forming two lines down the back, which sometimes are so broad as to join one another, then forming a very broad dorsal line; there are nearly always seven oblique pale yellowish green stripes on either side, and sometimes one or two lateral rows of black spots, more or less distinct. Sometimes the oblique lateral stripes are more or less bordered by black. To the genus *Acherontia* belongs alone the well-known *A. Atropos*. The caterpillar is so well known in Europe that I scarcely need

describe it, but as I have gone through all the Sphingidæ, I subjoin it also. I may mention that the dark variety of this caterpillar feeds on *Jasminum officinale*, whereas the green or common variety of the caterpillar is invariably found on *Solanum tuberosum*. *Acherontia Atropos*.—Caterpillar smooth, elongated and subcylindrical. The three anterior segments are of a fine green, dark green, yellow and yellowish green; rather variable and transversely wrinkled: the ground colour of the nine posterior segments varies from yellow to dark green, with seven oblique stripes on either side, meeting along the middle of the back, the last of which join at the base of the horn; the oblique stripes are half blue inclining to purple, and the posterior half yellow or yellowish white; the whole of the back between the oblique stripes is spotted with black or dark purple. Horn yellow, granulated, directed backwards, and with the tip thereof curved forwards. Stigmata black, bordered by white. Head green or yellowish green, with a broad black stripe on either side. Mandibles black. Thoracic legs shining black, spotted with light gray. Prolegs green, tipped with brown. Abdomen greenish yellow. Found during the months of August, September and October, upon the common potato, (*Solanum tuberosum*). When young, the colours are more vivid and the stripes &c. more distinctly marked. The horn is very long in proportion to the general size. The whole of the body, the thoracic legs &c., are covered with small whitish tubercular spots or asperities, those of the three anterior segments being much longer than the rest. Head green, with a pale stripe on either side. Thoracic legs pale brown and granulated; the rest remaining as before mentioned. *Dark varieties*.—These differ from the green ones as follows:—The anterior segments are of a pinkish white colour, with a broad black dorsal line, dilated in its middle, and with the sides more or less speckled with dark brown; the ground colour of the nine posterior segments is of a yellowish brown colour, with seven oblique dusky stripes meeting along the back, the last of which join at the base of the horn. The back is more or less spotted and speckled with dark brown; the whole body is covered with small whitish tuberculous spots or asperities. The horn is of a pale yellowish brown colour. Head pinkish white, and having directly over it, at the anterior part of the first segment, a broad transversal band of light brown. Prolegs dark brown, tipped with black. Abdomen paler than the body. Found in September, 1845, near Cour sous Lausanne. The last genus belonging to the Sphingidæ is the genus *Smerinthus*, which contains five species; two of which, *S. Tremulæ* and *S. Quercûs*, are scarce, and unknown to me in the larva state. I subjoin here the descriptions I have made of the three others. *Smerinthus Tiliæ*.—Caterpillar attenuated anteriorly. Head triangular. Horn curved. Body covered with minute tuberculous spots. Ground colour pale bluish green, speckled with minute yellowish tuberculous spots. A lateral series of seven oblique streaks of a pale yellowish white colour, darker on the side next the head, and of which the last terminates at the horn. Horn covered with minute, pale, tuberculous dots, with the base of a fine blue above and pinkish beneath, tipped with green, and then again with dark brown. Behind the horn is a patch of yellowish orange, bordered by yellow. Head triangular, spotted with small yellow spots, green, with two yellow lines meeting at the top. Stigmata pale flesh-colour, surrounded by purplish brown. Thoracic legs pale flesh-colour. Prolegs of the same colour as the body, tipped with light brown. Abdomen pale green. Found in July and August, on *Tilia platyphylla* and *T. microphylla*. *Smerinthus ocellata*.—Caterpillar rather attenuated anteriorly. Head triangular. Horn curved. Body covered with minute tuberculous spots. Ground colour fine green, generally with a rather bluish tinge, speckled with pale yellowish

minute tuberculous spots. Two longitudinal lines of pale yellowish white, extending over the three anterior segments. A lateral series of seven oblique stripes of pale yellowish white, bordered on the side next the head by green, of which the last terminates at the horn. Horn covered with minute, pale, tuberculous spots, of a light blue above and greenish beneath, and sometimes tipped with dark olive-green. The head triangular, speckled with pale yellowish spots, green or glaucous green, with two oblique yellow lines, meeting at the top. Stigmata very pale flesh-colour, bordered by deep purplish crimson. Thoracic legs pale flesh-colour, slightly tipped with reddish brown. Prolegs same colour as the body, tipped with brownish violet. Abdomen green. On poplars, willows and fruit-trees. *Smerinthus Populi*.—Caterpillar slightly attenuated anteriorly. Head triangular. Horn small and but slightly curved. Body covered with minute, pale, tuberculous spots. Ground colour bright yellowish green, or green, speckled with pale yellowish; seven oblique yellowish lines on either side (rather narrow), of which the last terminates at the base of the horn; also faint traces of two pale yellow longitudinal lines on the three first segments; there are also faint traces of sinuous pale yellowish and indistinct lines on either side, just above the legs. Horn yellowish green, tinged with bluish above. Head green and shagreened, with two oblique bright yellow lines, nearly meeting at the apex. Thoracic legs pale flesh-colour, tinged with pink. Prolegs the same green as the rest of the body, with a patch of bright yellow on each, marked with an orange-red dash, excepting the anal pair, which are bordered by a yellow line, as well as the sides of the anus. Stigmata orange-red or light scarlet, very oblong, and with a yellow streak in the centre. Abdomen pale green, with a rather indistinct whitish ventral line. This bears a great resemblance to the caterpillar of *Smerinthus ocellata* in some respects. Mandibles a deep red brown. Feeds on poplars and willows. September 1st, 1844, at Cour sous Lausanne.—*H. L. de la Chaumette*; *Church Street, Stoke Newington, August 22, 1851.*

Notice respecting Gastropacha Ilcifolia.—"It never rains but it pours," is a common adage, sometimes as applicable to entomology as to meteorology. The ink recording the discovery of the above-named insect was scarcely dry, ere it was announced to me, not that a specimen had been caught, but that two larvæ had been found, a few miles from Sheffield, by Mr. Wm. Green, one of which underwent its change, and produced the imago on the 20th of April last. I have not seen either of the specimens, having unfortunately been prevented by severe illness from attending the meeting of the Entomological Society on the evening that Mr. Atkinson's specimen was exhibited, and Mr. Green, an intelligent member of the Sheffield Entomological Society, not having brought his to London; but he called here on Wednesday evening last, and requested me to show him my "lappet" moths—the *small one* in particular. I told him I possessed but one indigenous species, but that I had continental specimens of some reputed ones, which I would show him, and instantly upon seeing them he pronounced his to be *Ilicifolia*; therefore I venture on his assertion, and subsequent information respecting the larvæ, to record its second capture in this country.—*J. F. Stephens*; *Eltham Cottage, Foxley Road, Kennington, August 13, 1851.*

Capture of Hyphenodes humidalis.—This is indeed a very common insect here, and it only surprises me how it has been so long overlooked. From the middle of July up to this date, it might be seen any fine evening between the hours of 6 and 8, flying on most of our swamps in great plenty. To give you an idea of its numbers, I may state that I took forty specimens in less than one hour, and might have taken as many dozens, could I have boxed them fast enough. On one occasion I took nine specimens

without moving from the spot where I stood. I am quite convinced that upon one swamp here, as many might be taken as would fill the void of all the cabinets in England. To give anything of its habits seems quite unnecessary, as it has been so well described before. Suffice it to say that its mode of flight is that of a true *Crambus*; its capture is the most easy imaginable, seldom rising from the bottom of the net, and when boxed, seems quite content in its new situation.—*John Harrison, jun.*; *Keswick, Cumberland, August 8, 1851.*

Notes on various Microlepidoptera.—I have not seen it mentioned that the larva of *Tinea cloacella* is insectivorous; yet I had two or three small moths eaten out of the setting-board by it some time since, and I fed it in a glass with similar diet, until it changed to the pupa. *Depressaria Hypericella*, (*Sta. Cat.*)—I have again bred this, and freely, from the little, black, agile larvæ found in the tops of *Hypericum perforatum*, about the 4th of June, changing to pupæ about the 20th, and developing on the 6th of July. But, though the plant is plentiful here in the limestone district, yet the spot whence I obtain my supply is single; it forms about half an acre of open ground in the centre of a gorse-cover, under a grove of ash-trees: on searching the plant in other localities, I did not obtain half a dozen larvæ. It is certainly the most elegant species we have, I think, and its fine crest gives it a great pre-eminence. In one of my specimens the usual luteous costal and discoidal marks are of a beautiful rose-colour. It is very easily bred; but not so *Depressaria Angelicella*, which I have also reared, but more sparingly, owing partly to its absolute scarcity, and partly to the tenderness of the larvæ, of which several died without changing to pupæ. The larvæ of the latter insect I take on the top leaves of *Angelica sylvestris* (a common plant in our damp woods and lanes), which it clusters together, about the same time as *Hypericella*, and taking the same periods in its changes. *D. pallorella*, too, I have reared (a solitary specimen) from the same plant; at least it came out with the *Angelicellæ*, in the same breeding-glass. I was grievously disappointed about *Xanthosetia inopiana*, having taken a great number of larvæ from the tops of *Inula Dysenterica*, at Midsummer, but all of these produced that common pest, *Ebulea crocealis*. In the first week of July, however, I fortunately met with the "real thing," but in the imago state, and almost invariably worn. I attribute this to the fact which I noticed, that they show themselves from cracks in the earth a little before sunset, and where they must be exposed occasionally to abrasion from particles of loose earth. This circumstance, too, induces me to doubt whether the larvæ may not feed on the roots instead of the leaves of the *Inula*: I shall try to ascertain this next year. I am sure it has some connexion with the *Inula*, for wherever I find the plant I can, almost certainly, reckon on taking the insect. It puzzles me to think why this moth should have been hitherto considered scarce, as here it is decidedly common; that is, in damp spots, where the *Inula* abounds. I could have taken fifty any evening in the beginning of July, and, even now, I find lots of worn specimens. *Tortrix spectrana*.—This I have bred freely from larvæ taken at Midsummer on the tops of *Epilobium hirsutum*, in an obsolete fish-pond, where *Carex paludosa* grows abundantly. I searched the same plant in the adjoining brooks, and other localities, however, without finding a single larva. The larvæ are rich brown and very active; they draw together the leaves and form a slight web in which the pupa forms; the latter is a very pretty object through a lens. *Eupœcilia notulana* (vel *udana* ?).—I met with this, as usual, in this old pool. I shall be happy to send the larvæ of *Achroea grisella* to any amateur who would like them.—*J. Allen Hill; Almondsbury House, near Bristol, August 10, 1851.*

Entomological Localities. By J. W. DOUGLAS, Esq.

(Continued from page 3219).

BIRCH WOOD.

“ The wood,
 The covert of old trees with trunks all hoar,
 But light leaves young as joy. * * *
 A populous solitude of bees and birds,
 And fairy-form'd and many-coloured things.”
Byron.—Childe Harold.

Fourteen miles on the road from London to Maidstone, in an iron frame on the top of a post, the portrait of a Bull — not by Morland or Landseer — swings blistering in the summer's sun, or creaking in the winter's wind. From all extremes of weather it is intended to announce to the traveller, that at the inn over the way he may obtain shelter, and such other means and appliances as may be needful. Many a time and oft, in past years, have I proved what a hive of good things this house was, not the less disposed to praise the sweets set before me on account of a walk from town before breakfast. Here it is that the oldest of our entomological associations—the Entomological Club—holds its annual field-day; on which, if it is evident, that like all old things it is very different to what it was when young, it is still apparent that it has lost none of the feelings of good fellowship and fun by which it has ever been distinguished. Close by is Birch Wood, of an extent that appears boundless, with paths that seem to be cut through a solidity of foliage; — such a glorious place to spend a summer's day in, and revel among

— “ The wild odour of the forest flowers,
 The music of the living grass and air,
 And emerald light of leaf-entangled beams.”

The soil is loam, in some parts sandy, and besides most of the kinds of trees and shrubs found at Darenth Wood, there are larch and Scotch fir. For the same reason as that before given (Zool. 3218), I am unable to say much of the smaller moths of this wood; but for all the larger Lepidoptera it is unrivalled near London. I enumerate the more uncommon species.

Endromis versicolor. April, flying; (*Ent. Mag.* vol. iv.)

Stauropus Fagi. Larvæ on oaks and birches; August.

Ptilophora plumigera. Larvæ on maple ; August.

Notodonta Carmelita. Trunks of trees ; April and May.

„ *Chaonia* and *Dodonea*. Larvæ on oaks.

Acronycta Alni. Larvæ on birch ; September.

Tryphæna fimbria. Larvæ on dwarf birches ; April.

Hadena lutulenta. At sugar ; August.

„ *Genistæ* and *contigua*. Larvæ upon dwarf birches ; September.

Aplecta tinctoria. Larvæ on dwarf birches ; April and October.

Cucullia Asteris and *Gnaphalii*. Larvæ on *Solidago Virgaurea* ; August.

Ennomos illustraria. April and July ; the larvæ feed on birch in October and June.

Speranza conspicuaria. Once plentiful on broom, but now extinct.

Tephrosia consonaria. Fir-trees, rare ; May.

Eupithecia indigata. Firs ; April and May.

Acidalia subsericeata. Underwood ; May.

Madopa Salicalis. Underwood, rare ; May.

P. S.—Perhaps the following *New Method of Pinning Micro-Lepidoptera* may be acceptable to some readers of the ‘*Zoologist*.’

“First catch your hare,” is the famous culinary maxim, introductory to the directions how to dress it. “First catch your moth” is a primary motto for the entomologist ; and as regards *Tineidæ* it is no unnecessary advice, for many collectors are deterred from capturing them by the difficulty of pinning them when caught. There is no denying that it does require some patience and dexterity to pin an insect with a thorax scarcely larger than the pin you seek to put into it ; but having accidentally discovered a method of pinning such small moths, which obviates some portion of the difficulty, I hasten to make it known. The moth being killed, either by laurel-leaves or brimstone, I turn it out on a piece of baize or woollen cloth, and having placed it with its back uppermost and its head towards me, I insert the pin in the thorax, and pushing it just through, remove the insect to a piece of smooth cork and press the pin through as far as required. The roughness of the woollen material catches the legs of the moth, and prevents its sliding backwards, which was always the greatest difficulty before. The pin — one of the finest of course — is held by a pair of narrow spring pliers, which are preferable for this purpose to the fingers, because they hold the pin tighter, and a better view of the thorax can be obtained than when the finger-ends are close

to it, as was always the case with a short pin. The operation may be performed by candle-light if a condenser be used, and it is accomplished with more certainty if the insect be viewed through a lens.

I am not prepared to say that this plan is perfection ; but I think it better than any other I yet know, and shall be glad to hear of an improvement.

J. W. DOUGLAS.

2, Eton Grove, Lee, Kent,
September 6, 1851.

Notes on the Hymenoptera of the Undercliff, Isle of Wight. By
FREDERICK SMITH, Esq., Assistant in the Zoological Department,
British Museum.

I HAVE at length had an opportunity of investigating, entomologically, a portion of the most beautiful part of the Isle of Wight — the Undercliff. My preconceived opinion was, that if one locality could be found to surpass all others in this country for its richness in hymenopterous treasures, in all probability it would prove to be the Undercliff ; and this I think I shall show to be pretty nearly the fact. Judging from the success with which I met, during a week in the month of July, a month not usually the most prolific in Hymenoptera, and taking into consideration the undisturbed and sheltered situation of the Undercliff, its variety of soil, and the countless wild flowers which completely carpet its lovely slopes and undulations, — all these combine in forming one of the most rich and prolific localities I ever had the good fortune to explore.

I commenced my campaign on the 14th of July, and prosecuted it daily up to the 21st, devoting usually from five to six hours a-day ; a little after 2 o'clock the sun begins to cast the shadows of the cliffs over the slopes at their base, and then the objects of my pursuit are no longer on the wing. I shall draw up a complete list of the species that I met with, as it will in all probability furnish an approximation to the actual number to be met with on the whole line of coast, between Sandown Bay and Blackgang Chine, during the month of July. My investigations on the present excursion only extend from Sandown to Ventnor ; I hope to complete the remainder of the Undercliff on a future occasion. I made a most careful examination of all the sandbanks and cliffs, and judging from the unmistakable evidences which they bore of insect labour, I conclude that at an earlier period of the

season, the numerical amount of species must be something which I will not venture to state as even probable, lest your readers should at once set me down as a wild enthusiast, instead of the plain matter-of-fact entomologist they may have previously considered me. But let a careful examination be made of the situations alluded to, and it will be found that the slopes and cliffs are completely riddled with the burrows of various species of insects; in fact I should expect to see in Sandown Bay, as I have done at Northfleet in Kent, in the beginning of May, such countless myriads of *Anthophora retusa*, that a flickering shadow would be cast by them on the beach beneath. I think it very probable that *Anthophora* is the bee alluded to by White in his 'Natural History of Selborne,' where he says that on a hill near Lewes "there haunts a species of wild bee, making its nest in the chalky soil; when people approach the place, these insects begin to be alarmed, and with a sharp and hostile sound dash and strike round the faces of intruders."

It must be borne in mind that all the species enumerated occur between Culver Cliff and Shanklin Chine, unless otherwise indicated.

Formica rufa, *F. fusca*, *F. nigra*, *F. cunicularia*, *F. flava*.

Myrmica rubra, *M. ruginodis*, *Nylander*, *M. lævinodis*, *Nylander*, *M. fuscula*, *Nylander*.

Mutilla ephippium. Of the male seventeen specimens, and seventeen females. I found this usually rare insect on the slopes at the foot of the cliffs in Sandown Bay. The male I never captured before; it is an insect of rapid flight, and extremely difficult to capture, and it is only by becoming acquainted with its mode of flight, that you can recognize and capture it. The female is plentiful, but my attention was directed to the capture of the male. It differs much in size, my specimens varying from $4\frac{1}{4}$ to $2\frac{1}{4}$ lines; one specimen is entirely black, no trace of the red thorax being perceptible. I also saw, but failed to capture, a magnificent male of *Mutilla europæa*.

Pompilus plumbeus, *P. rufipes*, *P. gibbus*, *P. exaltatus*, and *P. fuscus*.

Ammophila sabulosa, *A. lutaria*.

Larra pompiliformis. Very plentiful, furnishing its nest with lepidopterous larvæ.

„ *unicolor*. This rare species I met with both at Sandown and Luccombe Chine. I captured five specimens.

Oxybelus uniglumis. This species occurs in utter profusion.

Crabro cribrarius, *C. lapidarius*, *C. spinipectus*, *C. albilabris*.

Diodontus minutus.

Passalæcus gracilis.

Cerceris arenaria, *C. ornata*.

Philanthus triangulum. It will be recollected that Mr. Curtis was the first who captured this insect in England, at the back of the Isle of Wight, some years ago, and since that time only three or four specimens have to my knowledge been met with: but, says Shuckard, in his '*Fossorial Hymenoptera*,' "I suspect it is extremely local; but when its *metropolis* shall be discovered, it will be taken in abundance." Its *metropolis* is found, it is situated in Sandown Bay, and I have to the fullest extent verified his prediction. Any account of this hitherto extremely rare insect must prove interesting. The first sight of it on the wing was to me a most eventful and interesting occurrence. I had, however, formed an incorrect opinion of this fine insect; its appearance is calculated to mislead one into the belief of its being, as Shuckard remarks, "a very bold insect:" its appearance is quite deceptive. I found both sexes equally abundant about the slopes, principally on the flowers of the common bramble, and upon these I caught numbers with my fingers. They are easily captured without the aid of a net; and if disturbed, they only fly to a short distance and are easily taken. All my efforts to provoke the insect to sting were fruitless. The males are by far the most active, and occasionally in the hottest sunshine take rapid flights, returning to the same spot, somewhat after the manner of *Astata* boops; but when settled on flowers they are easily secured: in fact, instead of the fine, bold, and active insect which I had pictured to myself, they are rather stupid and inactive creatures; or possibly their inertness arose from that want of hereditary fear which animals acquire from experience, and which descends to their race, as we are told in Lord Brougham's '*Dialogues on Instinct*.' The progenitors of these unsuspecting creatures had acquired no sense of fear from the intrusion of man into their domains; and, like the birds in the Falkland Islands, which when man first appeared amongst them settled on his shoulders, so in like manner perhaps may the apparent stupidity of these insects be accounted for. Having so favourable an opportunity of observing the habits of *Philanthus*, it was not to be missed. In several instances I saw them burrowing, but, strange to say, it was always the male that was so employed. I could not be mistaken, as I captured all the insects so engaged, and in no instance did I observe the female thus occupied. I observed one or two of the latter sex conveying their prey, which was in every instance either *Halictus zonatus*, or the female of *Andrena fulvicrus*. By these observations I do not wish it to be

inferred that the female does not construct her own burrow; the males which I observed might have been re-opening a burrow accidentally closed: but every incident, "meet it is I set it down." This insect was observed by Latreille to provision its nest with *Apis mellifica*; thus we see, that like other Hymenoptera, when one species is not at hand, it selects some other which equally well answers its purpose. Thus, *Larra pompiliformis* at one time chooses a lepidopterous larva, and at another, as I have formerly shown, a grasshopper answers its purpose.

Of the *Diplopteryga* I observed only the two following species: —

Odynerus parietum. This species was in great profusion, and the majority of them were infested with the larvæ of *Meloë*; off one specimen I picked twenty-four larvæ; they adhere to the coxæ and metathorax of the wasps. I captured a considerable number of these wasps, and was astonished at the immense number of larvæ found on them; indeed, most of the bees were infested with them, particularly *Nomadæ*.

Odynerus spinipès. Very numerous, although rather late for the insect.

Colletes fodiens and *Daviesana*. The latter in profusion.

Sphecodes gibbus and *Geoffroyellus*.

Prosopis hyalinatus. In the greatest profusion.

Halictus rubicundus (*male*), *H. Smeathmanellus* (very plentiful), *H. villosulus*, *H. minutus*.

Andrena fulvicrus.

„ *simillima*, *Smith*. Of this new and beautiful species I captured a single female at Luccombe landslip; since which Mr. Baly has met with both sexes at Folkstone. I have described the species in the 'Museum Catalogue of British Aculeate Hymenoptera.'

„ *thoracica*. This species was plentiful, and was the only bee which I observed to frequent the everlasting pea (*Lathyrus sylvestris*), which grows at Shanklin, and also at Luccombe, in the most wild and beautiful luxuriance.

„ *chrysocetes*, *A. xanthura*.

„ ———? New species; male.

Cilissa tricincta.

Panurgus calcaratus. This local little bee I found in plenty at Luccombe Chine.

Nomada varia. Very abundant. I was delighted to meet with this beautiful little bee again; I only once before met with it in any numbers, that was in a lane leading from Green-street-green to Betsome,

in Kent, fourteen or fifteen years ago. It is parasitic on *Halictus rubicundus*, *zonatus*, &c.

Epeolus variegatus. Very plentiful.

Dasypoda hirta, male.

„ ———? male. Of *Dasypoda* I only captured two specimens, both males. One differs so greatly from all the males which I have seen of *D. hirta*, that I have little doubt it is the male of *D. plumipes*, a species met with in France, but not hitherto in this country. At some future period this, I trust, will be proved to be the fact, by the capture of both sexes.

Cœlixys rufescens (not uncommon), *C. vectis* (also pretty numerous), *C. umbrina* (in abundance), *C. herbescens*, *Nylander*, *C. 4-dentata* (scarce).

Megachile Willughbiella.

„ *maritima*. Of this local insect I captured a fine series. It very closely approaches the *lagopoda* of Linnæus, but having seen Swedish specimens of that insect, I will point out the distinctive differences: in the male of *lagopoda* the margin of the fringe of the anterior dilated tarsus is black within, and the apical joint of the antennæ is not compressed and dilated; the reverse obtains in *maritima*.

Melecta punctata.

Anthidium manicatum.

Osmia bicornis. The specimens worn, but much larger than usual.

„ *cærulescens*.

„ *xanthomelana*. I met with two specimens of this rare bee, but from their being slightly faded, I conclude I was too late for the species.

„ *spinulosa*. Not uncommon at Luccombe landslip.

Eucera longicornis.

Saropoda bimaculata. In the greatest profusion.

Anthophora retusa. A few individuals of this species were still about, poor solitary remnants of the mighty colony which I suspect had preceded them.

Bombus muscorum, *B. hortorum*, *B. terrestris*, *B. Raiellus*, and *B. lapidarius*.

Of *Tenthredinidæ* I only saw one species, *Allantus arcuatus*, and that was to be picked off every flower.

Ichneumonidæ. — Of this family I captured but few species, one, however, in abundance, which is not usually found in any numbers, — *Fœnus assectator*. This was very common on the flowers of the wild carrot (*Daucus Carota*). I was much amused with a singular habit

in this insect. I had strolled down to the beach on a rather doubtful-looking morning, about 9 o'clock; not an insect was on the wing, so I amused myself by turning over stones and rubbish in search of Coleoptera. In so doing I caught sight of a queer-looking object hanging from beneath the umbels of the wild carrot; this was my friend the Fœnus. He has a fancy for taking his repose in comfort; so he lays fast hold of the plant with his mandibles, and hangs suspended by them; the flat coronal of flowers hiding him from observation. There is something ludicrous in his appearance, his neck seeming to be stretched uncomfortably long, and his dilated posterior tibiæ and abdomen apparently aiding in the elongation. Here they hung in plenty, and I had only to unhook them and help myself at pleasure.

This list of captures in the month of July, not the best, by any means, for Hymenoptera, on the contrary one usually considered an interregnum in the capture of that order, will I think prove satisfactorily that the Undercliff ranks somewhere about A. 1. as a locality. Were this part of the Island well hunted over for these insects at all seasons, I expect that it would not only yield most of the known British species of Aculeata, but produce also a number not hitherto captured in this country. Altogether I consider the collection which I made in a week, as probably the finest yet made in the Island, and an earnest of the rich stores which I feel confident future observation will prove it to contain.

FREDERICK SMITH.

August, 1851.

On the Habits of Osmia parietina. By FREDERICK SMITH, Esq.,
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TWENTY years ago Mr. Curtis, in company with Mr. Dale, captured a little bee at Ambleside, on the banks of Windermere, in Westmoreland. At the time it does not appear to have been recognized as a novelty. Mr. Dale informed me that the bee appeared to be plentiful, and that it was flying about and settling upon a stone wall. Mr. Curtis captured two or three in passing, and subsequently, on examination, it proved to be an undescribed species. This little bee was figured by Mr. Curtis in the fifth volume of his 'British Entomology,' under the name of *Osmia parietina*.

A few months ago, Sir William Jardine forwarded two or three specimens of a bee to the British Museum, requesting to know the name; these were males, and from a description in Zetterstedt, I concluded

that they were males of *Osmia parietina*. I have subsequently learned their history, and now forward it to the 'Zoologist,' as the fitting receptacle in which to chronicle more particularly the habits of our native Fauna.

At Glen Almond, Perthshire, on the Grampians, about 800 feet above the level of the sea, in the month of November last, Mr. Joseph Robertson was examining and admiring the natural productions scattered over the rocks of that locality. On turning up a piece of stone, in size 10 inches by 6, which lay partly buried in the turf, he observed a mass of cocoons attached to the under surface; these he knew to be the production of some bee, and therefore carefully took home the stone, and the following was the result. The number of cocoons was about two hundred and thirty; about one third of them were empty when found; on a few of the others being opened, some were found to contain perfect bees; others, bees in the grub state; and in one or two was a parasite—*Chrysis Austriaca*? Nothing further took place until the following March, when the males came out at intervals, and subsequently the females; occasionally a *Chrysis* appeared; only a single *Chrysis* inhabited the same cocoon. The bees or their parasites continued to come out, more or less frequently, up to July.

At this time there were about thirty-five cocoons perfect, and I found on opening one or two that they contained active larvæ. I have no doubt that this is the case with the rest, and that in this state they will pass the winter, when, on the return of spring, they will change to the pupa state, and quickly afterwards arrive at their perfect condition. I have found that out of a number of the larvæ of *Anthophora* taken in May, some quickly assumed the pupa state, and soon afterwards arrived at maturity, and in this state passed the winter; others remained in the larva state, and did not change until the following spring, when they quickly arrived at their perfect condition; but a few did not change to pupæ until late in summer, and passed the following winter in their perfect state. These remarkable differences in the development of bees, will account for the circumstances which will occur to any one who will examine a colony of *Anthophora* at different seasons of the year; they will find at the same time larvæ, pupæ, and perfect insects in summer, and larvæ and perfect insects during the winter months.

Mr. Robertson brought the stone to the Museum, and as it is now in my possession, I am happy in having an opportunity of describing it. It is a blue slate-stone, smooth on one side, and rough and furrowed on the other; these ribs or furrows run in lines, exactly like

the graining of pine-wood. The cocoons are attached to the ridges and roughnesses of the stone. Taking these circumstances into consideration, I arrive at the following conclusions: — This species lives in communities, after the manner of *Anthophora*; and the empty cocoons indicate the fact, that a number of these bees must have frequented the same spot during a succession of seasons: the number of closed cells, when found, being at least double that of the empty ones, indicates that several bees deposited their eggs in close approximation. As no covering of any kind was constructed over the mass of cocoons, the parent bees doubtless attached their little masses of pollen and honey to the roughnesses of the stone; these could not have been more than three-eighths of an inch apart, or scarcely so much, in order to allow for the number of cocoons in the space which they occupied. The cocoons out of which the *Chrysis* emerged were precisely similar to those which contained the bees; and from this circumstance I am led to conclude that the larvæ of *Chrysis* fed on the pupæ of the bee after it had spun its cocoon: I have elsewhere shown that this is the habit of a parasitic insect belonging to the *Chalcididæ*, *Monodontomerus* — which feeds on the *pupa* of *Anthophora*, and not on pollen.

Our *Osmia* is the bee described by Zetterstedt in the '*Insecta Lapponica*,' as *Anthophora inermis*. In a note added to the description, it is stated that a nest was found under a stone, and that there were twenty-two cells attached to it. On their being opened, some were found to contain perfect bees, and others *Chrysis Austriaca*?

The females of *Osmia parietina*, *O. xanthomelana*, *O. fusciformis* and *O. pilicornis*, closely resemble each other, I therefore embrace the opportunity of pointing out a few additional specific differences. *O. xanthomelana* is the largest species; the pubescence on the face is long, black, and dense; and the bee varies in being from 5 to 6½ lines in length. *O. pilicornis* most closely resembles *xanthomelana*; it has black hair on the face, which is thin, and the insect is only 4 lines in length. *O. parietina* has fulvous pubescence on the face, and that on the base of the abdomen is also fulvous, thin, and occupies only the basal segment, or sometimes extends a little on the lateral margins of the second. *O. fusciformis* is very like *xanthomelana*, and in size stands intermediate between that species and *pilicornis*; its abdomen however differs from both species in being narrowed towards the base. The characters whereby to distinguish the males are sufficiently given in the descriptions of the species.

FREDERICK SMITH.

September, 1851.

Notes on Observations in Natural History during a Tour in Norway.

By the Rev. ALFRED CHARLES SMITH, M.A.

(Concluded from page 3230).

INSECTS.—Having devoted several papers to the birds, quadrupeds, and fishes of Norway, it would be invidious to omit all mention of the insects, which abound to a great degree: and the entomologist would be delighted both by the beauty and number of the species of moths, butterflies, and other insects which are to be met with in that country, and which must strike every indifferent observer; and when seen collected together, as they may be seen at the botanical gardens of Christiania (a collection formed by the indefatigable exertions of the Director's son, Herr Siebke, jun.), one is surprized that species so numerous, and forms so delicate, and colours so brilliant, should exist in a country where the winter has dominion for nine months in the year.

No one can journey through the forests one single day without being struck by the enormous ant-hills which abound there: though certainly they become perfectly Lilliputian when compared with those described by Mr. Gordon Cumming, as existing along the Limfropo and in the interior of Africa, and which he says are commonly seen twenty feet in height and a hundred feet in circumference; yet to one unaccustomed to such monstrous mountains of ants, the ant-hills of Norway appear sufficiently enormous. These hills vary from two to three and a half and four feet in height; they resemble a pyramid of dried fir-leaves, and are tenanted by myriads of black ants. I say *black* ants, for that is their prevailing colour and general appearance as you see them hurrying over the ground, although on examination their bodies are seen to be red, their heads, legs and abdomen jet black: they seem to cover the surface of the ground throughout the forests; indeed it is difficult to find a square yard where one of these busy diligent ants is not scampering along. If their heap is disturbed, out they come in tens of thousands, and carry off their eggs which have been disarranged, and otherwise lose no time in repairing their habitations. If you sit on a fallen tree, or lie down for your mid-day bivouac, or take your siesta in the forest, you are certain on awakening to find yourself overrun with these large black ants; but notwithstanding this happened to me almost every day, I was never stung or in any way inconvenienced by them, as a good shake always dislodged them at once. I am told that the bears eat them and their eggs,—a

sorry meal for so large an animal : I am also told that when one of their comrades is killed or wounded, others instantly come up and bear him away : I know not what degree of truth attaches to these Norwegian accounts.

The use made of this little creature by the inhabitants is strange enough, but I believe it is perfectly true. The common and almost the only intoxicating liquor of the country is a species of corn brandy, which the peasants distil for themselves, and which is denominated "Finkel;" this is very strong, and being at the same time very cheap (the price we paid for a quart bottle of it being about fivepence English), causes intoxication among the Northmen to be very frequent; and the men who act as your guides, your boatmen, your attendants in hunting, your provision-bearers on the fjeld, always expect frequent drams of "schnapps," or extra money (*drikke-penge*) to procure for themselves their accustomed potions. Some of the peasants, in making this brandy, thinking to give it an agreeable, sharp, pungent taste, flavour it with the squeezed ants of which I am writing. The idea is not a pleasing one to an English mind, but neither is the eating bread formed from the inner bark of the fir, as is done in some parts of Scandinavia; or the feasting on a dessert of the snails which are exported so largely from some of the German villages, the inhabitants of which gain their livelihood by the traffic; neither does the English palate relish the idea of the birds'-nest-soup from China, or the ragout of puppy so much in vogue in the Celestial Empire; and we know an Englishman will generally turn up his nose at the favourite dish of frogs of the Parisian epicure. But "*chacun à son goût*" is a good motto: let the Frenchman enjoy his frogs, the German his snails, the Norwegian his squeezed ants, the Chinese his birds'-nest, the Englishman his roast beef, for which he is so renowned abroad; though to show how little this Anglican dish is understood on the Continent, I was once asked, to my inexpressible amusement, by a waiter at a German hotel, who was proud that his *carte à manger* contained the English dish, whether Monsieur would prefer "roast beef de veau, ou roast beef de mouton?"

But I am sadly digressing from the Finkel and the squeezed ants. I cannot say whether I have ever tasted any Finkel so flavoured; I certainly never noticed any remarkably pungent sharp taste, so perhaps it never came in my way; but I can affirm that all the Finkel I drank (and I drank it every day) was extremely palatable: and in honour of it I gave the name of Finkel to my excellent poney, which, after taking me for three months over Norway, a distance exceeding

1200 miles, I brought (together with my carriage) to England, and which now luxuriates in this more genial climate, and in lieu of the chopped straw, dried fish and leaves, with which in winter the Norwegian peasant ekes out his scanty supply of provender for his cattle, Finkel enjoys good hay and corn; and now reposes himself in a bed of straw, whereas hitherto he was only used to the hard boards of a Norwegian stable. Let not any one from this account think that the Norwegian is careless of the comfort of his horse: on the contrary, he loves him and pets him as the Irishman does his pig; and never once did I see a poney ill-used in Norway, and as the natural consequence of this kind treatment, never once did I see a vicious horse, and on no one occasion did I ever see a horse kick or bite. They will follow their masters like dogs, and so little are they sensible of fear, that they will walk into the house, and I doubt not up-stairs, if necessary. They never shy, and I never, in the whole course of my journey in Norway, saw a horse driven with winkers over his eyes; indeed I think Finkel's patience would be sorely tried, were he to find his eyes covered in; for though so gentle and obedient, he is by no means sluggish or slow, but will trot up and down the steepest hills in splendid style, and never requires the whip.

This second digression about my good horse Finkel, will prepare the way for me to say something of the forest-flies, which at times torment man and beast beyond endurance. So tormenting were the flies to my poor horse, that after whisking about his long tail almost incessantly, and constantly getting the rope reins entangled in the most awkward manner, a consequence quite impossible to be avoided by a driver in a recumbent posture, when I stopped the carriage to re-arrange the reins, the soft sand in the road proved a temptation to poor Finkel which he could not resist: and regardless of the carriage and harness; regardless of my wrath when standing close by; forgetful of his high peaked collar, which stood far above his hogged mane; forgetful of his elegant brass pad, and careless of the long shafts of the carriage; down he would go deliberately into the sand, and roll himself about from side to side: and all my shouts and thumps and tugs at his head proved quite unavailing to prevent him from carrying out his intention, or to make him get up and resume his journey, until he had rolled to his heart's content, and relieved himself from that maddening itching caused by the abominable forest-flies. I may add, that as he never injured himself, or his harness, or the carriage, by these rolls, and as he seemed to enjoy them so much, and as I could not

prevent them, I soon left off attempting to stop him, and patiently awaited his pleasure to go on again.

Of all the creatures that in the vulgar but very expressive words of Brother Jonathan, "graze upon the human" (and in Norway all such abound to a fearful extent), there is none so persecuting and annoying, so persevering in its attacks by day as well as by night, so poisonous in its bite, so painful in its effects, as the mosquito. These horrid little gnats may be heard drumming away in the air at all hours. They never leave one alone. Had I not protected my hands with gloves, and my face with a veil by day, and had I not invariably slept under a mosquito-net, which I took the precaution to carry with me, I should have been driven wild at times: as it was, I was bitten often enough; they would dig through my gloves and socks, and attack my face without mercy when the veil was laid aside, and I could not always live under gauze: and especially when fishing was I subject to their attacks; they swarmed by the water-side, and many a time fairly drove me away from their haunts by their persecution. I have been teased by them in Italy many a time, thought them very disagreeable at Naples, and quite vexatious in the Pontine Marshes, but never until I went to Norway had I an idea what a mosquito can do: now I am fully aware of his powers, and am ready to acknowledge him the most puissant of tyrants. As I said before, other nightly marauders on the human body swarmed in multitudes in Norway, but I could defy all their attacks, as I slept in sheets, made with a view to their discomfiture before I left England, sewn round the sides and bottom like a sack, and crowned with a large mosquito-net at the head; ensconced in which I was secure from all their blood-thirsty attempts, and could even smile at the droning of my enemies, the mosquitoes, who hummed outside my net during the livelong night.

What the forest-flies were to my poney, and the mosquitoes to me, the gadflies are to the reindeer. They attack their horns, and nearly drive them mad with pain and annoyance; and then the reindeer will rush to the nearest water, and by plunging in their fevered horns try to gain some respite from the agonizing and maddening assaults of this diminutive but most bitter foe.

General Observations. — In concluding my Notes on the Natural History of Norway, I wish to say a few words on the general character of the country, because it is in my opinion the very best country in Europe for a summer tour, whether the tourist be a sportsman, a fisherman, a naturalist or an artist; its forests, its fjelds and its fjords for

the first, its rivers, streams and lakes for the second, and the whole country for the two last : its forests almost boundless ; its fjelds and fjords peculiar to itself, and containing points of exceeding beauty as well as of majestic grandeur and savage wildness ; its rivers and streams leading the angler into the most bold and glorious scenery ; its lakes deep, clear, and presenting every variety of landscape, from the cold, silent, sequestered, ice-bound mountain tarn, to the sunny, smiling, fertile lake of the valley, whose banks are clothed with verdure to the water's edge. And I purpose to enter into a somewhat fuller account of these fjelds and fjords, forests and lakes, than perhaps at first sight seems fitting in a journal devoted to the zoological part of Natural History, (I say *at first sight*, for, on consideration, the 'Zoologist' professes to record facts relating, among other things, to the *retreats* of the animals of which it speaks) ; and I do so, because it may serve to elucidate the notes I have written above, and to show how well fitted by nature is Norway for offering a safe and undisturbed retreat to many quadrupeds, which in all other parts of Europe have been long since extinct, and also to those countless multitudes of birds which resort thither annually to breed ; and I hope that a somewhat detailed account of the country, thinly peopled as it is, and presenting such attractions to the naturalist and sportsman, may induce others, brother-naturalists, equally able to enjoy the delights, and better able to note and relate their observations, to explore its little-known wilds, and ramble amidst its most magnificent scenery.

Norway appears to be one vast rock, about one thousand miles in length, and ranging from fifty to two hundred miles in breadth ; jutting up in all directions in numberless peaks and in long ridges, and so forming the strange, sharp mountains, and narrow, deep valleys, of which it is composed. These ridges, where they do not abruptly terminate in a gorge, run across the country for very many miles, forming back-bones (as it were) to the long expanse of mountains stretching on either side ; and here are those immense tracts of wild, desert, uninhabitable, uncultivated land, the famous *fjelds*, whose chief denizens are the ptarmigan and the golden plover, the reindeer, the lemming, and the ermine. This great rock is pierced in all directions on its southern and western sides, by narrow but long arms of the sea, which run into it, and split its edges into the most fantastic forms, and some of these rents extend inland for a hundred miles. The walls of rock which inclose these arms of the sea, frequently rise almost perpendicularly to a vast height, and in the event of a sudden squall (no uncommon thing here), render it quite impossible for the hapless boat-

men to land; in other fjords, the hills slope down gradually to the water, and are cultivated to the extreme edge, or clothed with enormous pine-forests: in all cases they are very picturesque, and afford easy communication from the sea with the interior of the country. Such are the arms of the sea, or *fjords*, one of the most remarkable features in the country; and these fjords, with the numerous rocky, uninhabited islands in them and at their mouths, form a favourite resort for a great variety as well as for immense numbers of water-fowl. The *forests*, too, are very remarkable, from their immense extent, their extreme silence, and the dark sombre character imparted to them by the deep shade and dark colour of the pines and firs of which they are chiefly composed. Many of these forests have little or no underwood, but huge fragments of broken rock, carpeted with moss and flowers, broken trunks, and many a giant of the forest uprooted by the winter's blast, and rotting in the ground, many a tree-top, broken short off under an accumulated mass of snow; these, and numberless trees and fragments of trees in every stage of decomposition, form the groundwork of the primæval forests of Norway. In other parts, one meets with an almost impervious underwood of shrubs and bushes; and sometimes, again, the whole mountain will be covered with copses of various trees, among which the birch, the alder, the aspen and the ash are most conspicuous. Everywhere these forests are carpeted with the most beautiful flowers, the abundance and variety and gay colouring of which must strike every observer: the great majority of them were entirely new to me; indeed, the botanist would find a grand field for his labours in Norway: not only in the forests, but also by the banks of streams, and on the wild fjelds, many rare and very beautiful plants abound. The forests, too, supply the people with an abundance of berries of various kinds, some of which were most delicious, and nearly all of them were till then unheard of by me; among which the "multebær" stands pre-eminent. And here we used to pick the well-known whortle-berry, the wild raspberry, and, above all, the strawberry, in the greatest profusion. The latter delicious fruit cannot be enjoyed in greater perfection than in Norway; considerably larger than our wood-strawberry, although not so large as that grown in our gardens, ripened under an unsetting sun in the forests which clothe the mountain, perfectly sweet and with the finest flavour, and eaten after a long mountain journey, in a bowl of most excellent cream,—they prove the greatest treat to the half-famished and wearied traveller. In speaking of the Flora of Norway, I must not omit the heaths, so abundant on some of the fjelds; nor the bog-plants to be found in the marshes in

the midst of the forests ; nor the very beautifully pencilled and delicate-looking flowers, which we often found close to and even surrounded by the snow.

These forests are the resort of the elk, the bear, the wolf, the capercailzie, the black-game, the hazel-grouse, besides a variety of smaller birds, passed over by the sportsman but highly prized by the naturalist: their immense extent, stretching over whole ranges of mountains, affords a secure retreat to the most timid animals. I need only remark that I drove through one such forest for nearly two hundred miles, and that for the greater part of that distance it extended on my left hand for fifty miles, without a single road for wheels through it, and on my right it stretched in many parts for twenty or thirty miles over the mountains ; and the extent, as well as the solitude of these dark sombre forests will at once appear.

The *rivers* of Norway, so well known by report to every angler, are amongst the most picturesque features of the country. They are all mountain torrents, varying in size and volume of water, according to the distance from their source and the number of tributary streams which have joined them in their progress towards the fjords ; still, however large, they are essentially mountain torrents, having all the character of those noisy, headlong, brawling waters, dashing down the rocks, and hurrying among the huge stones that form their bed, while here and there they form the most magnificent waterfalls in Europe, and perhaps in the world. Though Niagara and Schaffhausen may boast a greater volume of water than any fall in Norway, yet they want height to make them truly grand, indeed, their very width detracts from their real altitude ; but many of these falls in Norway combine the two great essentials of a perfect waterfall, — height and volume of water. What can be more stupendous and more perfectly majestic than the rush of a considerable river over a precipice, making a clear plunge of 900 feet into the depths below, as at the Voring-Foss ? Or what more glorious than a similar leap of 450 feet, as at the Rjukan Foss, while the foam rises up again far above the top of the fall, and a beautiful iris plays upon the spray, and the roar may be heard for miles ? Or what more elegant than the Feigum Foss, a direct jump of a considerable torrent of between 300 and 400 feet, the water descending in flakes like the most beautiful lace, something like the Terni fall in Italy, not dissolving into mere mist, as the comparatively insignificant fall of the Staubach, in the well-known vale of Lauterbrunnen in Switzerland ? Or what can surpass the Fiskum Foss on the Nam-sen ; or, as a cataract, the Leerfoss near Trondhjem ? Such as these,

and a hundred others of every form and description, continually present themselves to the lover of the picturesque: there is every variety of fall, from the thundering cataract and the roaring rapid, to the silent, thin, silver-like threads of foam which, falling from the precipices above, seem to lose themselves in mist in their descent, but which regather their misty, floating, wandering waters below, and again rush on as babbling torrents. These falls of every kind, so fascinating to the eye of the artist, are often inwardly if not outwardly reviled by the angler, for they form a barrier (perhaps at the very mouth of the river) to the salmon, and compel him to content himself with some lower pool, or to seek some more friendly river. But though he be disappointed of salmon, the angler will find trout above and below the falls in every stream, and in the lakes many other fish will give him sport. These inland lakes are very numerous, and frequently form a perfect chain through the valleys, connected together by the streams that feed them. On their banks the peasant's picturesque log-hut, or the richer bonder's farm-buildings, look out from amidst well-cultivated gardens and orchards, and fields of rye, and closely-cut meadows. Indeed, on the sloping banks of the inland lakes, some of the most fertile parts of Norway are to be seen, as well as some of the most rich and beautiful scenery, forming an excellent contrast to the stern, rugged, barren views found among the dark granite-bound fjords. So smiling and sunny are the banks of some of these inland lakes, that they have been compared to the lakes of Como and Maggiore, and indeed they do bear some resemblance to them in the summer; but in winter, when covered with thick ice and deep snow, and traversed by fur-clad people in sledges, all similarity between them would quickly vanish.

Such then is Norway; such are its fjelds, its fjords, its forests, its rivers and its lakes, whither so many of our water-fowl and some of our land-birds retire at the approach of spring to breed, and whence they return in such numbers every autumn and winter. To the naturalist, there can be no greater treat than to follow them to their summer quarters, and with them enjoy for a time a retreat from the more civilized world,

“Far from the busy hum and haunts of man,”

among these wild and most picturesque mountains, valleys, and lakes. The easy communication now opened with Norway by means of a steamer from Hull; the extreme cheapness of living and moving about in that country; the honest, open-hearted, character of the people, which more than counterbalance their extreme inquisitiveness and want of cleanliness; the beautiful, bright, and brilliant summers,

where day perpetually reigns and darkness is unknown ; — these and a thousand other charms to be found in a country so unique and so glorious in its scenery, and amongst a people so primitive, surely only require to be described to attract many a tourist to the shores of Norway.

I cannot close my account of Norway, without bearing grateful testimony to the kind reception we invariably met with from the inhabitants. We never threw ourselves upon the hospitality of private persons, if any kind of accommodation could be afforded at any station, house, or inn ; but occasionally, where none such existed, we were obliged to avail ourselves of the kind and friendly custom of the people, and beg hospitality of the Preesten, and in all such cases we met with the greatest courtesy, and a pressing invitation to prolong our stay.

On one occasion, the Preesten, who had lodged and fed us with all his house could furnish, provided us on our departure with a circular letter to the inhabitants of his extensive parish, bearing on the outside, in most regal style, the inscription,—“To the men of Hamerböen and Tufto ;” beginning in the most lordly tones, “Men of Hamerböen and Tufto,” and desiring them to assist and furnish with all necessaries and guide on their way, the two Englishmen who bore the letter : and most kind, prompt, and cheerful was the obedience of the parishioners to their pastor’s demand ; and most useful indeed did the letter prove for many days, when we were traversing a valley through which there was no road, and were seeking to cross a fjeld by an unfrequented route, a walk of about seventy miles, and of course we could find no single individual who could understand a syllable of ought save his mother-tongue, and we had not then been long enough in the country to know much of that.

Undoubtedly, he who visits Norway must not expect the luxuries of a more civilized country : he must be prepared for the roughest fare and the roughest lodging ; he must depend in a great measure on his gun and his rod for the first ; he must not object occasionally to sleep *al fresco*, with the wild fjeld for the second : but if he can accommodate himself to this, and can laugh at such drawbacks to enjoyment as the want of many things he has hitherto considered necessities of life, he cannot fail to be delighted. The artist will find a most glorious subject for his pencil at every turn ; the sportsman, game such as he will not meet with elsewhere ; the angler, fish of such weight and quantity as to satisfy the most insatiable ; the ornithologist, the entomologist, the botanist, the finest field for their researches,

and the greatest profusion and variety of species ; and all will agree that for really magnificent scenery, and bold, and wild, and grand views, nothing can surpass the rocky mountains and waterfalls, the fjelds and fjords of “gamle Norge.”

ALFRED CHARLES SMITH.

Old Park, Devizes,
September 2, 1851.

Note on the Water-rat.—Here are a great number of water-rats, which are very troublesome in destroying the banks. Some time ago I found some laurels, about 4 feet high, in a dying state, and on examining them, I found that the stem had been gnawed through just above the roots, which must have been done by the rats, as the marks of their teeth were perfectly evident. They have also destroyed some of the white water-lilies, which I have been at some trouble to plant. They eat the leaves as soon as they get near to the surface. My gardener told me such was the case, but I did not believe it, until I found a piece of the leaf floating about, bearing evident marks of teeth and claws.—*Samuel Gurney, jun. ; Carshalton, August 4, 1851.*

Toad found in a Flint.—The Académie des Sciences, in its last sitting, was occupied with a grave question of what, in homely language, may be called a “toad in a hole.” In digging a well at Blois, in June last, some workmen drew up from about a yard beneath the surface, a large flint, weighing about 14 lbs., and on striking it a blow with a pickaxe it split in two, and discovered, snugly ensconced in the very centre, a large toad. The toad seemed for a moment greatly astonished, but jumped out and rather rapidly crawled away. He was seized and replaced in the hole, where he settled himself down very quietly. The stone and toad, just as they were, were sent to the Society of Sciences at Blois, and became immediately the subject of curious attention. First of all, the flint, fitted together with the toad in the hole, was placed in a cellar and embedded in moss. There it was left for some time. It is not known if the toad ate, but it is certain that he made no discharge of any kind. It was found that if the top of the stone were cautiously removed in a dark place he did not stir, but that if the removal were effected in the light, he immediately got out and ran away. If he were placed on the edge of the flint, he would crawl into his hole and fix himself comfortably in. He gathered his legs beneath his body, and it was observed that he took especial care of one of his feet, which had been slightly hurt in one of his removals. The hole is not one bit larger than the body, except a little where the back is. There is a sort of ledge on which his mouth reposes, and the bones of the jaw are slightly indented, as if from long resting on a hard substance. Not the slightest appearance of any communication whatsoever between the centre and the outside of the stone can be discovered, so that there is no reason to suppose that he could have drawn any nourishment from the outside. The committee, consisting of three eminent naturalists, one of whom has made toads his peculiar study for years, made no secret of their belief that the toad had been in that stone for hundreds, perhaps thousands of years ; but how he could have lived without air, or food, or water, or move-

ment, they made no attempt to explain. They accordingly contented themselves with proposing that the present should be considered another authentic case to be added to the few hundreds already existing, of toads being found alive embedded in stone, leaving it to some future savant to explain what now appears the wonderful miracle by which nature keeps them alive so long in such places. But the distinguished M. Magendie suggested that it was just possible that an attempt was being made to hoax the Academy, by making it believe that the toad had been found in the hole, whereas it might only have been put in by the mischievous workmen after the stone was broken. Terrified at the idea of becoming the laughing-stock of the public, the Academy declined to take any formal resolution about the toad, but thanked the committee for its very interesting communication; and so the subject dropped. One word, however:—if the toad had really not been embedded in the flint, how comes it that after being taken out, he always fixed himself exactly in the cavity, that the cavity fitted him to a hair's breadth, and that the hardness of the stone had made an impression on his jaw? — *Times Newspaper*.

Toads buried alive. — In the last number of the 'Zoologist' the Editor requires information respecting "toads in stones." I cannot say that I ever saw the reptile in such a situation, but will relate two anecdotes, one of which came under my own observation, the other resulted from it. In the year 1821 I was residing in the country, and in my court-yard was a set of stone steps for mounting on horseback. These being useless to me, I desired they might be removed. On taking them down, the lowest step, a coarse red conglomerate, measuring about 3 feet in length, 10 inches in depth, and about 14 in width, was raised by a heavy bar. It had been well bedded in mortar, in which, while soft, a toad had been evidently placed, as there was no appearance of any way by which it could have found ingress or egress, the mould or cast being as perfect as if taken in plaster. On the removal of the stone the toad remained torpid for a few minutes, when it seemed to revive and then crept out. From the owners of the property I ascertained that the steps had been placed there forty-five years before, and, to the best of their knowledge, had never been moved. The second account is from a clergyman, and originated from my informing him of the above. He caused a pit to be dug in his garden, six feet deep; at the bottom was laid a slate, on which a full-sized toad was placed, with an inverted flower-pot over it. The hole and edges were well luted with clay; the pit was then filled in, and on that day twelve months re-opened, when the toad was found alive, and as well as when inclosed in its living tomb. If, therefore, it could exist in such a state for twelve months, it is not impossible that it might do so for a much longer period. — *F. W. L. Ross; Broadway House, Topsham, September 16, 1851.*

Note on Mecinus collaris.—In my notice of the capture of *Mecinus collaris* (Zool. 3186), I unintentionally omitted to state that my friend Mr. Grant took a few specimens of this insect by sweeping, in April last; and in justice to him I think he ought to have the credit of finding the head-quarters for the insect. — *Samuel Stevens; 24, Bloomsbury Street, August 7, 1851.*

Proceedings of the Zoological Society.

Monthly General Meeting, September 4, 1851.—E. J. RUDGE, Esq., in the chair.

Richard Gibbons, Esq., was elected a Fellow.

H. E. Lord Harris, Governor of Trinidad, was elected an Honorary Member.

Professor E. Forbes and W. O. Lamond, Esq., were proposed as candidates for the Fellowship.

The Report of the Council stated that at the previous Meeting Messrs. W. Graham, H. Wilson, F. H. Gabriel, J. Blyth, J. Lubbock, C. S. Crowley, H. Heane, G. Lenox-Conyngham, the Marquis d'Azeglio, Lord Burghley, M.P., W. Milner, Esq., M.P., and Professor Percy, were elected Fellows; and the number of visitors to the Gardens during the month of August was 145,025. The total number of visitors during the year has been 489,679. Among the donations to the Menagerie during the month of August, one of the most remarkable is a Syrian bear, presented by Mr. Alderman Finnis. But by far the most important are a male and female tiger, which have just been received from Bombay, and are a gift from His Highness the Guicowar of Baroda. The support of this prince, who is one of the most powerful of Western India, is to be regarded as another most fortunate incident in the history of the Society, and has already added one of the most considerable desiderata in the collection of Carnivora. The Society are greatly indebted to Col. Outram, Resident at the Court of Baroda, to Mr. Davis, and to Mr. A. N. Shaw, F.Z.S., for the valuable services which they have rendered in conciliating the favour of His Highness.—D. W. M.

Proceedings of the Entomological Society.

September 1, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

Previous to the ordinary Meeting, a Special General Meeting was held, at which a revision of the Bye-Laws was made. One of the alterations was, that a new class of Members, called Associates, should be created, for the express purpose of admitting working entomologists to the advantages offered by the Society's Meetings, Library, and Collections.

The following donations were announced, and thanks ordered to be given to the donors:—‘*Entomologische Zeitung*’ for July and August; by the Entomological Society of Siettin. ‘*Bulletin de la Société Impériale des Naturalistes de Moscou*,’ 1849, No. 4, 1850, No. 1; by the Society. ‘*Abhandlungen der Mathemat.-Physikalischen Classe der Königl. Bayerischen Akademie der Wissenschaften*,’ Band v., Abth. 1, and Band vi., Abth. 1; Munich, 1851: ‘*Bulletin*’ ditto, 1847, Nos. 1—35: by the Academy. ‘*Melitemata Entomologica*,’ auctore Dre. Frederico A. Kolenati, Fasc. 1; Petropoli, 1845; by the Author. ‘*On the Hessian Fly*,’ by Dr. A. Fitch; by the Author. ‘*The Athenæum*’ for July; by the Editor. ‘*The Zoologist*’ for September; by the Editor. A selection from the Hymenoptera collected at the Isle of Wight and exhibited at the last meeting; by Mr. F. Smith. Four specimens of *Lobophora polycommata*; by Mr. T. H. Allis. Two specimens of *Cecidomyia Tritici*, and two of a new species of *Cecidomyia*; by Mr. Brown, Burton-on-Trent.

Alfred Beaumont, Esq., of Huddersfield, was balloted for and elected a Member of the Society.

Mr. White exhibited a specimen of the spider-like crustacean, *Nymphon giganteum*, *Goodsir* (Stromii? *Kröyer*), taken at a depth of twenty fathoms, in the sea on the coast of Zetland.

The President exhibited a moth reared from eggs received from Mr. Parker this year, and which came from the province of Cheetiang, in the North of China, where the fine kind of silk called "Tsatlee" is produced by the caterpillars of this species. The moth, a Bombyx, apparently differed from the common B. Mori; the caterpillar, however, fed on mulberry-leaves.

The President also exhibited three specimens of a Nepticula, probably *N. centifoliella*, reared from leaves of a rose-tree. The larvæ, which apparently were without legs, mined the leaves in a tortuous manner, and when full-fed came out of the receptacle they had formed, and made flat, boat-shaped cocoons, each being placed between the foot-stalk and the bract of a leaf.

Mr. Spence sent for exhibition the eggs of some insect beautifully arranged round the foliage of a species of Coniferæ.

Mr. Grant exhibited a specimen of *Gelechia Brizella*, a new British species taken by him at Southend, in July. He also exhibited *Peronea permutana*, *Gelechia pictella* and *Agrotis valligera*, all taken by smoking bushes on Barnes Common, Surrey; a new and inland locality for these hitherto maritime species: and from the same place, smoked out of broom, *Depressaria atomella*.

Mr. Smith exhibited six specimens of a species of *Pteromalus*, reared from larvæ found in pods of furze with *Oxystoma Ulicis*, on which he had no doubt they were parasitic. He considered them identical with the example mentioned at the March meeting, when the President had stated his belief that it was a parasite upon *Oxystoma*.

Mr. Smith also exhibited a new British bee, *Bombus arcticus*, *Dahlbom*, taken by Mr. A. White, in August, at Lerwick, where it was not uncommon in the gardens of Mr. J. A. White, Union Bank, and Mr. Bruce, Sand Lodge.

Mr. Smith exhibited two living specimens of *Lamia textor*, female, taken by Mr. Jacques, near Bristol.

Mr. Douglas exhibited leaves of laburnum, showing how larvæ of *Cemistoma Laburnella* had fed between the cuticles, and when full grown had left their habitations and made their cocoons on the under side of the leaves. Also, a specimen of *Mecinus collaris*, the new British Curculio discovered by Mr. S. Stevens at Gravesend, at which place, in June, Mr. Douglas had gathered some flower-stems of *Plantago maritima*, in which the larvæ of this beetle fed, causing a large swelling immediately below the flower, and from one of these the example now exhibited was produced. He also exhibited specimens of *Depressaria atomella*, reared from broom, *Gracilaria Ononidis*, *Dicrorampha acuminatana*, *Z. (caliginosana, Guen., Doub., non Tr.)*, and an apparently new species of *Stigmonota*, all taken at Headley Lane, August 10.

Mr. Stainton exhibited a minute pupa-case, probably of a *Nepticula*, on oak. It exactly resembled a caraway-seed, and was fastened to a twig by some exceedingly fine filaments of silk.

Mr. Spence communicated the following extract of a letter from his son, R. H. Spence, Esq., dated Cold Springs, near Baltimore.

"As Dr. Smith predicted, the Cicadæ [*C. septemdecim*] came out of the ground from May 25th to June 5th, in swarms, the ground being actually riddled with the holes from which the pupæ emerged. Every tree, and shrub, and fence, and stick, and stone, in fact, everything, was covered with them. I have counted a hundred on a small peach-tree planted last year. Their habits, in one respect, are different from those of other Cicadæ, as they are excessively slow and lazy, and will allow themselves

to be caught without the least attempt to get away. The *black locust*, as they call it here, and all the South-of-Europe Cicadæ, are very active, and exceedingly difficult to get hold of. The injury they do is this. The female with her ovipositor makes several incisions in the bark of the small branches of trees, and in each incision lays about one hundred kidney-shaped white eggs. In about a week or ten days the branch withers and falls to the ground, when the grubs, which are then hatched, penetrate into the earth and remain there, as they say, seventeen years. The trees have suffered so much, that the woods have quite an autumnal appearance."

Mr. Spence also communicated the following extract of a letter from Signor Carlo Passerini, of Florence, Honorary Foreign Member of the Society:—

(Translation).—"This autumn I have had the fortune to find the habitat, where it undergoes all its transformations, of the rare teredile *Denops personatus*, and soon I shall publish its history with plates, which I believe will augment the known notices (and they are very few) of the Terediles. I have collected several specimens of this pretty Coleopterous insect, which I shall be able to impart to entomologists. In announcing this to English entomologists, you may say that I reserve a couple of this *Denops* for each. Remember me particularly to Messrs. Capt. Parry, Thwaites, Curtis, Westwood, and G. R. Gray, and I shall be well content if they ask from me Coleoptera, Hymenoptera and Lepidoptera of Tuscany."

Mr. Stainton read an extract of a letter from J. C. Bowring, Esq., Corresponding Member of the Society, dated Hong Kong, June 9.

"I inclose a pair of a species of *Cyclosomus* I met with yesterday morning for the first time. This beetle burrows to some depth in the sand by the sea-shore; it is very active in its movements, and when exposed on the surface disappears beneath the sand with truly wonderful rapidity, diving down head foremost. I captured about twenty specimens by turning up the sand for some distance to the depth of five or six inches."

Mr. White read the following extracts of a letter from Mr. Bowring, dated Hong Kong, June 2.

"Captain Champion tells me that you entomologists at home will not believe my account of the parasite on *Fulgora*. Now yesterday I showed Mr. Harrington a specimen which I have just reared, the moth having come out a day or two ago—a fine male, with beautifully pectinated antennæ. The pupa-case with its cottony covering is well preserved. This specimen I intend to send to the Entomological Society. Among my most recent captures are my *Cicindela speculifera*, now out, and of which I took fifteen specimens yesterday, also a few of the three other species of which I sent specimens to the British Museum last year. The other day, when up at Canton, I got no less than thirty-two specimens of *C. Chinensis*—magnificent fellows, as perfect as can be. The insect is in every collection, but all the specimens are villainous things, with great May-poles of needles stuck through them. I have also taken some very beautiful Carabideous insects this spring; a fine *Panagæus*, like *P. quadrimaculatus*, one or two species like *Pogonus*, and some which I cannot make out, one particularly, which belongs to the *Truncatipennes*, and has the labrum produced into a long snout, like some of the *Cistelæ*. Another capture made this spring is one which surprised me not a little; viz., a fine *Creophilus*, quite as large as, and closely resembling, our *C. maxillosus*. Are you aware of any other species from the tropics? *Carabus Lafosse* is another fine thing I have added to my cabinet lately; and I hope this summer to get some good specimens of *C. prodigus* from the hilly country N. W. of Canton."

The President, in exhibiting the Cecidomyiæ presented by Mr. Brown, read the following extracts from letters received from that gentleman : —

“ Last year, when examining the economy of *Cecidomyia Tritici*, I discovered another species of the same genus, which appeared to me also to be attached to the wheat, but I was not then able to verify my observations. I have, however, this year been more fortunate, and have seen the dark-winged species in the act of depositing its eggs in the ears of flowering wheat, exactly as is the habit of *C. Tritici*. All the specimens sent are females, as I have only been able to find one male, and I cannot at present tell to which species it belongs. The males appear to be excessively rare, or appear very early. Curtis says he has never seen the male of *C. Tritici*. I have swept at least two other species of *Cecidomyia* from the wheat, besides re-discovering the spotted-winged species which Markham bred about sixty years ago from wheat. I have however taken only two specimens of Markham's species, and about the other species I know at present too little to bring them under notice.”

“ I send herewith two preparations of the flea of the hen-roost, showing the insect in its three stages. I find the larvæ in the dust on the floor of the hen-house, apparently living on the fragments of feathers and scales from the quills of the fowls ; some of them changed to chrysalids whilst in my possession, forming a slight cocoon of particles of dust.

“ Wilson's article on Entomology in the ‘ *Encyclopædia Britannica* ’ contains a strange error respecting the habits of *Echinomyia grossa*. He states, on the authority of Reaumur !! that it is bred in cow-dung ; but it is really bred in the larva and pupa of the egger moth, (*Lasiocampa Quercûs*). I always took Reaumur's cow-dung species to be the common orange-shouldered fly whose name I know well, but which at this moment I forget.”

Mr. Douglas said that in the August number of the ‘ *Entomologische Zeitung* ’ was an account of the habits of some of the species of Paussidæ, which he had thought sufficiently interesting to translate. The note was communicated by Herr Guenzius, for some time and now resident at Port Natal, to Herr C. A. Dohrn, President of the Stettin Entomological Society.

“ Port Natal is rich in species of Paussidæ peculiar to itself, for I have found here, besides one species of *Pentaplatarthrus* and four species of *Cerapterus*, nine other species of Paussus. All the species dwell parasitically with ants which make their nests variously, underground, under stones, or in timber. The larger Paussidæ (*Cerapterus* and *Pentaplatarthrus*) are supported by the larger ants, and the smaller by the smaller ants. All the species are night-creatures, and fly during the spring, that is, from the middle of October to December, especially in thundery weather, from 9 to 11 o'clock in the evening. In February also I find Paussidæ, but only the smaller species. Like almost all night-creatures they are dazzled and attracted by light, and I have taken my rarest Paussidæ through open windows and doors on still warm nights. Their flight is swift, and with a peculiar shrill sound, so that after hearing it I am sure to see a beetle. All the species contain a caustic liquid, which they eject in an audible manner from the abdomen upon being seized. This liquid from *Pentaplatarthrus Natalensis* stains one's fingers blood-red for several days ; from the larger species of *Cerapterus*, the purplish brown of iodine ; from the *Pleuropterus alternans*, Westwood, it burns the epidermis, forming white spots. The odour of this liquid is extremely pungent, like ammonia, and reminds one also of iodine. The explosion is repeated, as in the *Brachini*, three or four times, each time weaker than before, when it becomes exhausted.

Pentaplatarthrus I searched for early in the morning in a more laborious manner in the ants' nests, until by accident an easier method was suggested. On one very hot afternoon, between 4 and 5 o'clock, immediately before a thunder-storm, I saw in the red sand of the roads, on a woody hill, a long train of ants busily running backwards and forwards, and I remarked among them a Pentaplatarthrus gently led by its antennæ by several ants, which accompanied it in the common procession. My first idea that it was forcibly held against its will I gave up, when, on this and following days, I several times saw the same fact occur on the approach of a thunder-storm. I had with me at the same times a young Kaffir, an ardent and dexterous collector, and when I told him what I had observed and seen confirmed, he stared with astonishment at the strange escort, and cried out — 'By Tschaka (by the Great King)! the ants have chiefs, and they lead them out to promenade.' In this manner, with the assistance of this and two other Kaffir boys, I obtained a good many specimens of Pentaplatarthrus, and a pair of another species of Paussidæ." Herr Dohrn adds: —

"So far Herr Guenzius. I have only to remark that among the collections of insects received from him is a specimen of Pentaplatarthrus with an ant still attached to it; two other specimens of the same ant lay in the wadding in which the Paussidæ were packed, so it is probable that it is this species of ant with which Pentaplatarthrus lives. It is red, with a silky shining body, and very much resembles our *Formica rufa*, but is somewhat smaller.

"I have no doubt that the *Paussus Natalensis* of the Berlin Museum, and the species described under this name in the 'Proceedings of the Linnean Society' by Mr. Westwood, are identical with *P. 4-maculatus*, *Buquet*, (*in litt.*) Among a considerable number of examples before me, some are simply red-brown, but by far the greater number have a darker, nearly black, band across the middle of the elytra, which not unfrequently extends along the suture so much that only four red-brown spots are left, one at each angle of the elytra. I also agree with my friend Westwood (*Proc. Linn. Soc. June 19, 1849*), that *P. Natalensis* is synonymous with *P. Paussoides*."

Mr. Douglas read the following extracts from a letter he had received from Mr. Weaver, dated Corrie, Rannoch, August 22nd.

"The larvæ of the rose-beetle (*Cetonia ænea*) I discovered here, live for three years in ants' nests, and feed on the ants' eggs, of which they devour great quantities, which I learned by keeping and feeding some therewith for several months. I have seen them of all ages, and although exposed to thousands of ants, I never saw them molested. I have seen the beetle alight on a large ants' nest, and dive into it without fear to deposit its eggs. The larva changes to pupa within a cone of its own making, but still within the ants' nest."

"With respect to *Tinea ochraceella*, I believe that its larvæ feed in the ants' nest, for I always rout the insect out of the nest, and it has no disposition to fly away from it."

Part 6 of the new volume of the Society's Transactions was announced as ready.

The following is a condensed account of the American currant-moth (*Abraxas* ^p *Ribearia*), from the pamphlet presented to the Society by the author, Dr. Asa Fitch.

"We have in Eastern New York a moth, which will rank as the compeer of the European *Abraxas Grossulariata* in destructiveness, though varying from it somewhat in its habits, and in the characters which it presents, both in its larva and perfect state.

"Soon after the middle of May, when the currant and gooseberry bushes have become well clothed with leaves, the larva appears upon them. It is of a lively light

yellow colour, and thickly covered with black dots of different sizes, most of which, when closely examined, are discovered to be symmetrically arranged, and forming rows lengthwise of the insect. It continues to feed and to increase in size until near the middle of June, when, being fully grown, it is about $\frac{7}{8}$ of an inch long and $\frac{1}{8}$ of an inch in diameter. It then descends to the ground, and burying itself slightly under the surface, changes to a pupa of a shining black colour, about thrice as long as broad, and measuring about $\frac{1}{2}$ an inch in length. The pupa is not inclosed in a cocoon, nor surrounded with any other covering, but lies naked in contact with the earth; in this state it continues but a few days."

"For at least three years past the currant and gooseberry bushes of particular gardens in this district have, in June, been stripped of their leaves by these worms so completely, that they would be bare as in winter, but for the dead stems and blighted fruit adhering to them. A second growth of leaves begins within a week after the worm has disappeared, but no fruit is yielded, and this annual destruction of foliage cannot but prove most pernicious to the shrubs."

"On first examining the larvæ of this insect, I felt confident that they would produce moths congeneric with the European gooseberry-moth. But an inspection of the perfect insect rendered it apparent that they could not be included in the genus *Abraxas*, as defined by its founder, Dr. Leach, without a modification of its characters, which must be made, or a new genus must be constructed to receive our insect. This is also the opinion of Dr. Harris, but I decline availing myself of it, and have therefore placed the insect doubtfully in the genus *Abraxas*.

"*Abraxas*? *Ribearia*. Nankin-yellow; body immaculate; wings with two brown bands, the outer composed of sub-confluent dots, whereof three in the midst of the anterior pair are more conspicuous and permanent. Wings expand slightly over $1\frac{1}{4}$ inch."

A detailed description follows, illustrated by a coloured plate of the larva, pupa, and imago.—*J. W. D.*

Proceedings of the Society of British Entomologists.

September 2, 1851.—Mr. HARDING, President, in the chair.

Mr. Sequerie exhibited a box of insects, some of them rare, taken at Darenth during the past month.

Mr. Harding exhibited a most splendid box of Lepidopterous insects, amongst which were *Nonagria neurica*, and the variety with the black spot, *Eupithecia palustraria*, *Erastria uncana*, *Lobophora polycommata*, and *Lithosia flava*.

Mr. Harding observed that the economy and localities of *Lithosia flava* were but little known, and consequently it was but rarely captured. In all the entomological works he had perused its habitats were erroneously given; and he strongly suspected that two species were confounded together, but it would require another season to prove if such were the fact.

Mr. Briant observed he had seen two specimens of *Colias Hyale* taken near Gravesend, on the 1st instant.

Mr. Oxley informed the members that Mr. Shield had gone to Ireland, partly for the purpose of making entomological collections; and was in the hope of capturing some rare or little-known species in a part of the British Isles hitherto neglected as regards its Entomology.

Mr. Geo. Briant was admitted as a subscriber to this Society.—*J. S. N.*

Anecdote of a Weasel and a Frog.—About 4 o'clock on one of the bright sunny afternoons of last week, I was passing along a lane near this town, on the south side of which runs a rough stone wall, such as usually divides the fields upon the Cotswold Hills, and on the opposite side of this lane runs a raised foot-way, bordered by a ditch, a very low old wall covered by a hedge. I am thus minute, the more clearly to picture the scene where I witnessed an interesting illustration of that law of Nature by which the death and destruction of one species ministers to the pleasure and life of another. Some eighty or a hundred yards in advance of me, my attention was arrested by some low object, moving along the ground and across the highway. In a moment the idea of a weasel entered my mind; and having a strong impression of its predatory and hunting habits, I moved quickly towards the object in motion, to learn what was going on, thinking, as they hunt by scent, it might be in pursuit. As I advanced towards the moving body it quickened its pace, until I was too near to be pleasant to the weasel, as it proved to be, which was dragging or carrying a large yellowish frog by the neck, much in the manner we picture a fox carrying a goose, or as a cat bundles along with an overgrown kitten. The short legs of the weasel obliged it to do its best to meet this difficulty, by stiffening its back and neck, and thus raising itself forwards and upwards, as much as possible, and so made a very decent waddle or walk of it. By the time I reached the party, the weasel with its burden had reached the path, and I was then too near for him to feel himself safe. He instantly abandoned his captive treasure, and ran into the low wall under the hedge, when, as I stood looking at the bleeding victimized frog, I could hear the weasel moving about in the hedge and wall in observation on his prey and me, waiting for some fortunate turn in the tide of his affairs to regain the golden prize of which my interference threatened to rob him. Poor fellow! I could not tell why I should deprive him of the fruit of his labour, or why I should have any pleasure in killing or wounding one who was only following his "lawful occupation," as I was.

"The meanest things that are,
Are as free to live, and to enjoy that life,
As God was free to form them; and he that hurts
Or harms them there, is guilty of a wrong—
Disturbs the economy of Nature's realm,
Who, when she formed, designed them their abode."

I retired to a considerable distance to watch events. After the lapse of about five minutes, whether roused by the warmth of the sun or the absence of his destroyer, the bleeding frog (not killed) began to move, and made several leaps along the path. The weasel in its ambush had no doubt his eyes upon him, and thought it was time to be doing; so he cautiously ventured out of the hedge, and on to the middle of the path. His low stature rendered his horizon very limited; so, to meet this difficulty, he raised himself on his hind legs, after the manner of a squirrel, to extend his field of view. I distinctly at the distance saw him thus expose the white of his breast and belly, when, discovering no danger near, he dropped down on all fours, ran to his half-revived victim, seized him, and recommenced lugging him away into the ditch and up the low wall aforesaid, along the top of which I saw him drag his bloated burden, when, dropping with it off the wall into the next field, I left him to pursue *his* business, while I pursued mine. I am not aware that there is anything very novel (to a naturalist) in this anecdote, but I thought it might interest some of your readers; indeed, it strikes me, that the ready way in which the weasel met the difficulties of the case, shows that

it was not the first time that he had been thus engaged. — *Robert Brewin ; Cirencester, September 23, 1851.*

Anecdote of a Stoat and a Leveret.—One morning last autumn I chanced to fall in with a stoat in pursuit of a leveret, evidently following the game by scent, for the hare had disappeared before the stoat came in view. How long the chase had lasted I cannot say, but when I discovered the hunt, the leveret was running languidly, whether from the exhaustion of a long chase, or in ignorance of the deadly nature of its pursuer, I must leave to the learned in these matters. Guessing the line the chase would take, I followed, and watched the stoat “head” and turn the hare, and in a few minutes more overtook it and sprang on its neck, where he seized his prey by a deep bite. The leveret uttered a shrill scream, and all was over! I ran up and was in at the death; saw its death-struggles, whilst the stoat was firmly fixed on the neck. On my coming within a few feet the stoat ran off to a short distance, leaving the hare mortally wounded on the ground, but on my departure I saw him quickly return, and again fix himself on the dead hare, whether to suck the blood, or get at the brain, I must leave others to determine.—*Id.*

Occurrence of Sorex remifer in Hampshire.—As I am not aware that any mention has been made of the occurrence of *Sorex remifer* in the southern part of Hampshire, it may perhaps be not uninteresting to some of the readers of your Journal, to know that two specimens were obtained in this neighbourhood about three weeks since, one by myself, and another by a gentleman residing in this place.—*Charles Barron ; Royal Naval Hospital, Haslar, September 5, 1851.*

On the Habits and Instincts of Birds.—In my last letter (Zool. 3232) I mentioned the social feelings which certain birds display towards man: instance the swallows and martins, how invariably they attach themselves to our houses and outhouses; they visit, as Horace says,

“*Pauperum tabernas
Regumque tures.*”

The holy Psalmist says “The swallow has built her a nest, even in thy courts.” Although the boys in England are almost proverbially cruel, I admire their forbearance towards the swallow and martin. How often do we see the nests of these birds attached to low houses, within the reach of a short stick, and yet they are generally suffered to hatch and fly away in safety! Some writers have asserted that they destroy hive-bees, but I am certain this is untrue. I have been cruel enough to shoot them when a youth, and have always found them crammed with small flies. The following extract from a description of the habits of the swallow from the pen of Sir H. Davy is grand:—

“He is the joyous prophet of the year, the harbinger of the best season. Winter is unknown to him, and he leaves the green meadows of England in autumn for the myrtle and orange groves of Italy and for the palms of Africa. He is the constant destroyer of insects; the friend of man; and with the stork and the ibis may be regarded as a sacred bird: his instinct may be looked upon as flowing from a Divine Source.”

The missel-thrush, or “storm-cock” as he is termed, is the largest singing-bird. He is well described in White’s Selborne, and mentioned particularly by my late worthy

friend the author of the 'Journal of a Naturalist.' This bird, in the absence of all the other divinely inspired little choristers of the woods, often sings and puts forth a beautiful, short, wild and plaintive chant, a little like one of the notes of the black-bird, and it sounds doubly beautiful, although with little variation, because he is often quite unaccompanied by any other birds, and in very cold changeable weather. Last winter, one or two sang in December and January close to my house every day for many weeks. I admire Mr. Knapp's work excessively; it is in my opinion alike creditable to the heart and head of the author: in fact, I read it with delight. But in describing this bird he strangely says, "He seems to have no song, except a *harsh predictive note*." He also hazards another opinion on the song-thrush, and says they all sing differently. I believe firmly that the only difference is between young and old birds — the same routine of notes, but in young birds differently placed. I fear my late worthy friend and neighbour had not a good ear for music. The song-thrush has eleven variations, the nightingale fifteen. The late Dr. Jenner, the inventor of vaccination, and author of the first good natural history of the cuckoo, in a conversation with me many years ago, told me he amused himself with changing the eggs of singing birds in his garden and shrubberies, and seeing the young brought up by their strange parents. Knowing from experience that the redstart was a very wild and shy bird, I asked if he ever tried the experiment with it; his reply was that he had tried and failed: they will forsake their nest immediately if their eggs have been moved. The starling is a bird which seems indued with less of the common instinct of other birds. I have had their nests destroyed from my water-shoots and other places, and, strange to say, in a few hours after the old birds were occupied in rebuilding in the same place. Probably from their great numbers they find a difficulty in getting places to build in, but I know of no other bird that displays such a want of cunning; yet their congregating with rooks, which they do constantly, and, I have no doubt, for safety, shows that they do not want instinct of another sort. — *H. W. Newman; New House, Stroud, September 4, 1851.*

Note on Birds entrapped at a Magpie's Nest. — One of our keepers, in July, discovered a magpie's nest, with five young ones; he destroyed the hen bird and her young ones, leaving one in the nest, and setting a trap for the male bird. The next day a hawk (I am afraid the harmless kestrel), which he calls a sparrow-hawk, was in the trap, and so on, till seven hawks of some sort or other were caught in about the space of ten days. The keeper's lad, on going up one Sunday morning, discovered to his astonishment a fine long-eared owl (*Strix Otus*) alive, which he kept for me some time, but it at length died of swelling in the injured leg. After this a squirrel, a wood-pigeon, and a starling were trapped in the same nest. The above strikes me as very singular, particularly as the long-eared owl, although formerly common in our large woods, has been of late years, by the free use of keepers' eyes, cunning, guns and traps, become very rare. — *T. L. Powys; Lilford Hall, Oundle, Northamptonshire, October 1, 1851.*

Occurrence of the Iceland Falcon in Ross-shire. — My friend Mr. Thurnall has lately received a fine specimen of the Iceland falcon, killed at Inverbroome, Ross-shire, in May last, by Mr. Grant, gamekeeper to A. K. George, Esq. It is a young bird; weight, 3 lbs. 15 oz.: length, 21 inches: extent of wings, 3 ft. 9 inches. The following is a short extract from the Inverness paper: — "When first noticed, the hawk was hunting about on a hill-top, and when shot he had blood on the feet and legs, as if he had just killed some bird. Seeing him take notice of a terrier dog he had with

him, Mr. Grant took advantage of the shade of a rock until the hawk came round it, seemingly threatening the terrier and driving him onwards, circling in the air, and uttering a wild and peculiar cackling noise; when in front of the rock a shot ended his hunting career."—*F. Bond; Whittlesford, Cambridge, September 8, 1851.*

The Hobby (Falco subbuteo) and Sparrow-hawk (Accipiter Nisus) breeding together.—About the end of last May, a male hobby and female sparrow-hawk paired together at Witchingham, in this county, and enlarged a ring-dove's nest, which was in a fir-tree about nine or ten yards from the ground. Five eggs were laid in it, one of which was taken by the gamekeeper, whom I had previously told to keep for me any hawks' eggs he might take. As soon as the other eggs were hatched, he shot both the hobby and the sparrow-hawk, leaving the young birds to starve. Fortunately I was able to get the hobby preserved, although it had been hung up more than a month. The egg which the gamekeeper kept for me has rather more red about it than is usual for a sparrow-hawk's egg to have, and not so much as that of the hobby usually has: but the hobby's egg sometimes very much resembles the sparrow-hawk's. I have heard of another instance, also in this county, of the hobby and sparrow-hawk pairing together in a wild state, but the birds were both shot before any eggs were produced.—*L. H. Irby; Poringland, near Norwich, September 25, 1851.*

Occurrence of a White Sparrow-hawk in Norfolk.—A young male sparrow-hawk, which was perfectly white, with the exception of a few feathers on the back of the usual colour, was killed at Riddlesworth this summer. The beak was also white, but the irides and legs were as usual.—*Edward Newton; Elveden, Thetford, September 16, 1851.*

Piebald Varieties of the Hedge-sparrow, (Sylvia modularis).—On Wednesday last I saw a beautifully marked variety of the hedge-sparrow at Weston-super-Mare, the head, wings and tail were white, the back and breast being white mottled with brown. The bird was quite close to me, but unfortunately I had no gun at hand. A few years ago a whole nest of piebald hedge-sparrows were hatched and reared in this neighbourhood.—*A. M. Norman; Eglesfield House, Yatton, Somerset, September 19, 1851.*

Occurrence of the Whinchat at Scilly.—This bird, which is of rare occurrence in most parts of this county, was observed and killed at Scilly, no doubt in its southern migratory course.—*Edward Hearle Rodd; Penzance, October 10, 1851.*

Further Notes on the Dartford Warbler.—I have on three previous occasions noticed the occurrence of this pretty little warbler on the Downs in the vicinity of this town; and as it appears to be very local, shy, and difficult of observation, I cannot refrain from writing a few more words about it. It was on the 12th of October last year that I first had the pleasure of hearing the note of a warbler new to me, and a moment's reflection told me that the only six warblers I have ever seen so late in the year never made such an extraordinary noise, and therefore the noise must come from the throat of a Dartford warbler. Having obtained the bird, and found my supposition correct, I searched diligently day by day, but unsuccessfully, until the 7th of November, when I obtained a male in autumnal plumage, in the same place, the first was a female: both birds said "tscha, tscha." On the 12th of February Mr. Swaysland, of Brighton, killed a third, being attracted by the note, and on the 15th and 21st of February I saw a pair whose movements were fully described in a former number of the 'Zoologist.' These birds were in full summer plumage. On the 19th of March I saw another pair. These were male and female, but they uttered no note. Week after week from that time have I watched their haunts for hours, and roamed the triangle of

Downs between Lewes, Brighton and Ditchling, in the hope of seeing them, and finding their nest and young, but all was in vain, until the 15th of July, when Sir Henry Shiffner's head gamekeeper brought me two young birds, with the down still on them. He had shot them on the tops of the furze. They uttered no note. My efforts were still unsuccessful until the 8th of September, when I shot a female, an old bird in autumnal plumage; since that day I have seen several, all near the same locality, and the first time I heard their note again was on the 27th ult. I can now hear them (but never more than two in one place) on any *sunny* day, uttering their double angry note, and skipping about from furze to whitethorn, but never remaining more than ten seconds in sight in the same place. Rusticus says they are very difficult to obtain, but this applies in this district only to lame, fat, and gouty old gentlemen, as, if a person is active, he can easily run them down, which I have done on three different occasions. I never saw one fly more than 50 yards without resting: their little, short, round wings are not formed for long flights. The position of the bird is not good either in Yarrell or Rusticus, as I have always observed them with the head turned half round when they are uttering their note, and both these engravings are intended to represent the bird when "singing," if I may so call it. The sexes are easily distinguished on the wing, the male is so much darker-breasted, particularly in spring. In autumn, the throat, in both old and young birds, is mottled with white, and the chestnut-red extends further down the breast in the male than in the female. In February they are in the best plumage, the throat and breast of the male being then bright chestnut-red, free from all white speckles, and the back slightly tinged with lead-colour. The back of the female is more brown, and the sexes are at this time better distinguished. Though Yarrell mentions so many localities for this bird, I suspect it is very local, as I have never found it change its place, although quite as promising cover was near at hand. They are very fond of whitethorns, and I have invariably seen them enter at the bottom and come out at the top. I have seen them catch flies on the wing, and hover over the furze like a whitethroat.—*J. B. Ellman; Lewes, October 8, 1851.*

Occurrence of the American Waxwing or Cedar Bird (Bombycilla Carolinensis), in Great Britain.—I am told that Mr. Batson, of Horseheath, near Linton, Cambridgeshire, has in his possession a specimen of the cedar-bird of North America, which was killed in this country. The particulars of the time and place of capture of this bird, I will endeavour to obtain as soon as possible, and I should be much obliged to any one who will send me any further information on the subject, as I believe this is the first recorded instance of the occurrence of this species, not only in Great Britain, but in Europe.—*Alfred Newton; September 4, 1851.*

Occurrence of the Ortolan Bunting (Emberiza hortulana) at Scilly.—A bird of this species, apparently having assumed its autumnal plumage, was killed upon Trescoee Island a day or two since. The resemblance of this bird to the female of the ciril and yellow buntings is very great, and it would pass as such if the peculiar colour of the orbits, beak, and belly, which is mottled with chestnut and yellowish white, did not point out the difference.—*Edward Hearle Rodd; Penzance, October 10, 1851.*

Occurrence of the Rose-coloured Pastor (Pastor roseus) at Redcar.—A fine specimen of the rose-coloured pastor was shot yesterday in Coatham Marsh, near this place.—*T. S. Rudd; Redcar, August 29, 1851.*

Occurrence of the Mocking Bird of America (Turdus polyglottus) in the County of Kent.—About the 19th of August, a fine specimen of this bird was killed on a farm near Ashford.—*W. H. Cordeaux; Canterbury, September 15, 1851.*

Curiously coloured Rook in Suffolk. — A rook, a nestling, but perfectly feathered, was killed near Bury St. Edmund's this spring, of a dingy purplish brown or maroon colour all over, suffused with a darker shade; the legs were light brown, and the beak flesh-colour.—*Edward Newton; Elveden, Thetford.*

Occurrence of the Great Black Woodpecker (Picus martius) in Essex. — As you some time ago begged that any occurrence of the black woodpecker in England, not hitherto recorded, might be made known to you, and as this bird still occupies a distinguished place in controversial ornithology, I am induced to tell you of the following instance: and although the example in question was not obtained, yet I have no doubt, from the knowledge of birds possessed by my informant, that no mistake was made as to the species. One was seen in the park at Audley End, near Saffron Walden, June 5, 1847. It was put up first from off the ground, where it appeared to have been feeding, and flew into a high tree, uttering a note like that of the green woodpecker, but hoarser and louder. My informant was at the time walking with two other persons, one of whom had a single-barrelled gun; they went round to the other side to drive the bird out, and it flew, passing first behind another tree, and then came round almost over my friend's head, affording him a full view of it. His chance was, however, by that time gone, for he fired at the bird through the tree the moment it appeared, fearing that it would be his only opportunity of doing so. It then entered a plantation; and although no efforts were spared to obtain it, and a large reward was offered for it, it was not even so much as seen again. I am sure that in this case no mistake respecting the bird was made; and the observer related the occurrence as he was showing me the collection at Audley End, remarking how nearly it had been enriched by the substitution, for a foreign skin, of that of a *bonâ fide* British-killed specimen of this rare bird: and my friend, only a day or two ago, showed me a note of the occurrence which he made at the time.—*Alfred Newton; Cambridge, Sept. 18, 1851.*

Occurrence of Black Grouse and Quails in Northamptonshire. — It may interest some readers of the 'Zoologist' to know that the black grouse (*Tetrao Tetrix*) has occurred in this county. A gray hen was observed in September, 1849, in a wheat-stubble near Cranford, the seat of Sir G. Robinson, and was afterwards seen three or four times in that neighbourhood, and in Grafton Park: and in May and June, 1850, a labourer at Cranford, in clearing out a ditch, disturbed her from her nest containing ten eggs, which were put under a hen, but all proved rotten. I never heard of this bird in this county before, and the nearest place that I am aware of in which they are indigenous is Sherwood Forest, in Nottinghamshire. I may also mention the occurrence of several quails (*Coturnix dactylisonans*) in the neighbourhood of Aldwinkle and Titchmarsh; these birds having hitherto been rare, at all events, in these parishes.—*T. L. Powys; Lilford, Northamptonshire, September 25, 1851.*

Occurrence of the Spoonbill (Platalea leucorodia) in Yorkshire. — On Friday, the 2nd of August, Charles Vaux, servant to Mr. George Milner Farmer, observed a singular looking bird among the ducks. He got his gun and shot it, when it proved to be a fine adult female of the spoonbill. He brought it, scarcely cold, to Mr. Graham, of York, by whom it has been set up, and it is now in my collection. The place of its capture was Wilberfoss, near Pocklington, about eight miles from York.—*W. M. E. Milner; Nunappleton, September, 1851.*

Occurrence of the Spoonbill at Hailsham, Sussex. — On the 3rd instant a man observed six spoonbills feeding together in a field near the above place, and succeeded in

shooting three at one shot, which are now in my possession. — *J. B. Ellman ; Lewes, October 8, 1851.*

Occurrence of the Spotted Redshank in Suffolk. — An adult male example of this species was shot at Cavenham in the first week of September. — *Edward Newton.*

Captures of Rare Birds at and near Wisbech. — The following rare specimens have recently been obtained in this neighbourhood, and, except where otherwise stated, are now in my possession.

Knot, (*Tringa Canutus*). Four specimens in summer plumage shot near Wisbech, July 29.

Bar-tailed Godwit, (*Limosa rufa*). In summer plumage at Guyhirn Wash, July 31 : for the Wisbech Museum.

Temminck's Stint, (*Tringa Temminckii*). Two specimens on the banks of the Nene, Wisbech, September 3.

Pigmy Curlew (*T. subarquata*). Two specimens at Guyhirn Wash, September 6 : for the Wisbech Museum.

Green Sandpiper, (*Totanus ochropus*). Banks of the Nene, Wisbech, Septemb. 11.

Greenshank, (*T. Glottis*). Two specimens, banks of the Nene, September 10 and 11 : one for the Wisbech Museum.

Dusky Sandpiper, (*T. fuscus*). Seven specimens, five caught in a plover-net at Guyhirn Wash, September 3 and 6 : one for the Wisbech Museum. One shot near Ely, September 11 : for the Ely Museum. One shot at Clenchwarton, September 11, for the Lynn Museum.

Sandwich Tern, (*Sterna Cantiaea*). Shot at Hunstanton, September 6 : for the Wisbech Museum.

Greater Shearwater, (*Puffinus cinereus*). Caught near Lynn ; for Lynn Museum. — *T. W. Foster, Curator of the Museum ; Wisbech, September 12, 1851.*

Note on Autumnal Migrants. — The little stint, wood sandpiper, curlew *Tringa*, and bar-tailed godwit, have all made their appearance in this district. — *Edward Hearle Rodd ; Penzance, September 7, 1851.*

Occurrence of the Little Stint (Tringa minuta) at Scilly. — Two specimens of this pretty little sea-shore bird were obtained from Scilly within the last week. — *Id. ; September 15, 1851.*

Occurrence of the Little Stint at Pevensey, Sussex. — I obtained a pair of these minute sandpipers from the above place a few days since. — *J. B. Ellman ; Lewes, October 1, 1851.*

Occurrence of the Little Ringed Plover at Shoreham, Sussex. — I obtained a specimen of this scarce bird from the above place a few days since. — *Id.*

Occurrence of the Wood Sandpiper at Newhaven, Sussex. — I shot a mature specimen of the wood sandpiper at the above place on the 9th ultimo. It was in company with some dunlins, and did not fly away when they rose, which attracted my attention. By my glass I could see that it was not the common sandpiper ; and I was enabled to get sufficiently near to shoot it with No. 9 shot, which did not hurt it. — *Id.*

Occurrence of the Spotted Redshank at Eastbourne, Sussex. — I received a very fine adult male specimen of the spotted redshank, in autumnal plumage, on the 9th instant, which was killed at the above place on the 6th. — *Id.*

Occurrence of Temminck's Stint at Newhaven, Sussex. — I shot a specimen of Temminck's stint among the mud-fells at the above place, on the 5th ultimo. — *Id.*

Occurrence of the Whiskered Tern at Scilly.—A bird was submitted to my inspection which was shot near Trescoe Abbey, on one of the Scilly Islands, a few days since, and which I have no doubt is an immature specimen of the whiskered tern (*Sterna leucopareia*). It is larger and more bulky in appearance than the black tern, with the remarkable distinction of a prominent angle on the lower mandible, giving the bird quite a gull-billed appearance. The feet are semipalmated, and the tail three quarters of an inch deep in the fork. Unfortunately I cannot well get at some of the leading dimensions, as the bird is set up. The length from the carpal joint to the end of the first quill-feather is about 9 inches less $\frac{1}{8}$; from the bottom of the neck to the end of the longest tail-feather, 7 inches. The whole under parts pure white; the upper part of the back dark brown, with the edges of the feathers lighter; scapulars dark brown, with broad margins of yellowish white; top of the head, occiput and nape black, with a powdered mixture of gray and rufous; forehead to crown white; a few light bluish gray feathers, apparently newly moulted, are interspersed on the upper region of the plumage; greater and lesser wing-coverts light bluish ash, some of the feathers having the extremities brown; tail with a gradually deeper tone of slate-gray towards the point of each feather, which terminates in a brown spot edged with yellowish white; the collar of the neck above is bluish ash; the ear-coverts are grayish black, exhibiting a large patch. The under parts being of a uniform pure white, the whisker is not developed. The bird appears to be in a state of active moult, and rapidly assuming the winter plumage, as described by Mr. Yarrell, in his 'British Birds,' iii. 406.—*Edward Hearle Rodd; Penzance, September 2, 1851.*

Occurrence of the Pomarine Skua in Adult Plumage near Penzance.—An adult example of this species occurred this week about a mile from Penzance, in Mount's Bay. The autumnal moult appears to be nearly completed. The middle tail-feathers extend about $1\frac{1}{2}$ inch beyond the tail, and are of equal breadth to the end: the sides of the neck exhibit a set of disconnected subulated feathers of a pale primrose-yellow: the top of the head and back dark brown: the abdomen and vent ash-brown: the upper part and sides of the breast blotched and sparingly spotted with indistinct brocoli-brown. Length from tip of the beak to lateral tail-feathers $17\frac{1}{2}$ inches; breadth 46 inches.—*Id.; October 10, 1851.*

Note on the Short Sun-fish, (Orthogoriscus Mola).—In the January number for the present year (Zool 3001) I mention that a large specimen of this fish was brought ashore at Pennan in the course of the summer of 1850. I had not such an opportunity of examining that specimen as I could have desired, and the only palpable disparity, as it occurred to me, between it and the written descriptions of the species to which my attention had been directed, lay in the scalloped configuration of the caudal fin, which also appeared uniform with the rest of the body, or, as the fishermen observed, "it seemed to have no tail at all." I am happy in being able to say that a most favourable opportunity of more minutely examining this species has just been given me, which confirms former observations, as well as puts it in my power to enlarge upon them. On the 19th ultimo, a crew of fishermen belonging to Gardenson captured a noble specimen of the species in question off Troup Head, the most northerly point of this line of the Moray Firth. When first seen, it was slowly floating along on the surface of the water, having its dorsal fin and shoulder exposed.

Offering little resistance, they soon succeeded in fastening a rope round the base of the projecting dorsal, and by this was it dragged onwards until landed in the harbour. Notice of the achievement was speedily sent to me, but being from home—to the credit of our fishers be it spoken—they moored the prize in the spot, and preserved it intact for nearly three days to await my return. On going down to the harbour, before I was aware, a dozen sturdy fellows were by my side, and getting them fixed in the rope attached to the captive, we made out, after no slight effort, to haul him up on the beach. He was then found to measure 5 feet 9 inches in length, and 3 feet 6 inches in depth of body. The depth of the pectoral fin was 10 inches, that of the dorsal and anal fins 1 foot and 10 inches respectively. Upon the inferior surface of his body was a cluster of parasites, which, from Yarrell's 'Fishes' (ii. 353) I conjecture to have been *Tristoma coccineum*. I had no convenient means of ascertaining the weight of the carcass; but after being lightened of the internal viscera, it was found to be quite sufficient load for an ordinary work-horse. The points, however, to which I particularly desire attention, are the tail and skin, as these, in the two examples I have met with, differ considerably from every figure, as well as from all the descriptions I have perused. In the figures, the outline of the caudal fin is by much too regular, and its rays far too distinctly marked, which may perhaps be accounted for, as in the case of Mr. Yarrell's figure, by the likenesses having been taken from young specimens. In the examples referred to, the tail-fin was cut into seven ample rounded scallops, the three in the middle being the largest; while the structure of the fin was completely concealed, being so deeply overlaid by the common integuments, that there was no indication of either ray or joint, until, on laying hold of it with the hand, it was found to move freely backwards and forwards, showing a length of about ten inches. The base of the middle scallop measured $2\frac{3}{4}$ inches. A perpendicular from the middle of this base-line to the most prominent point in the curve of the scallop, measured about $1\frac{1}{2}$ inch; the others gradually decreased in size, each however corresponding in every way to its opposite in position. Both Mr. Yarrell and Dr. Parnell describe the skin as rough, but "without spines;" in these specimens the contrary was the case. I send with this a shred of the skin, which you will see is very thickly set with spines of a peculiar type. They may be readily detached from the skin, when they show the radiated base, as in the spine of the spinous shark, and they are also recurved, the point of the spine being directed to the tail. But, what does not appear in the case of the shark referred to, they are compressed longitudinally with respect to the body of the animal, and serrated on the top, reminding one of the jagged cutting edge of one form of the honey-combed variety of the human incisor. They are besides furnished with lateral tufts of hair, imparting to the whole a rough bristly aspect. Some of the spines will be observed to be regular; but I consider the prevailing form will be found to be as I have said. The smell of the skin when recent, and indeed of the body generally, resembles that of *Goniaster equestris*. — *George Harris; Gamrie, Banffshire, September 23, 1851.*

Note on the Spinous Shark, (Acanthias horridus). — Since I have mentioned the spinous shark, allow me a remark on the specimen referred to by Mr. Smith of Monquhitter, (Zool. 3057). I have little doubt of the specimen being as he describes it, and a female too, as it contained a mass of eggs, in size from that of a filbert to that of the egg of a common hen, which were entangled in a membranous-looking viscus. I am puzzled, however, as regards the dentition, and the more so after looking into the Supplement to Yarrell's most valuable 'History of British Fishes,' where at page

59, that author gives two cuts of the teeth, as opposed to each other in the jaws, and from two specimens. The teeth of the upper jaw of the specimen that came under my observation correspond—quite correspond I would say—with those of the superior maxillary represented in the first figure just referred to; but the teeth in the inferior maxillary were wholly dissimilar. So far from having anything of the lancet set sideways appearance of those in the upper jaw, they were flat, tapering, conical, pointed, recurved teeth; and in place of suggesting the idea of a cutting intent in their structure, looked like an apparatus simply intended for keeping a hold of the prey. Having lodged the jaws of this specimen, along with a fragment of the spiny skin, in the Edinburgh University Museum, it might certainly be worth the while of a competent ichthyologist to examine them, should opportunity serve.—*Id.*

Occurrence of the Striped Red Mullet (*Mullus surmuletus, L.*), at Gamrie.—One of the fishermen of the village of Gardenston sent me a very beautiful example of this fish about the middle of August. Its length is 10 inches. When brought to me, the bearer faithfully delivered the message that “the oldest man in Gamrie had never seen the like of it;” which may be explained by a reference to Mr. Yarrell, who says it “is of frequent occurrence along the extended line of our southern coast, from Cornwall to Sussex, but becomes more rare in proceeding from thence northward by the eastern coast.”—‘*Brit. Fishes*,’ i. 28. Happening to be from home when it arrived, the fish was within an ace of being cast forth as worthless! Alas, for the days of the Emperors! — *Id.*

The Variegated Sole on the Sussex Coast.—A few days ago a fish-vender from Brighton offered some soles, which proved to belong to the above-named species, although unluckily my attention was not attracted to the subject until too late for a full examination. Yarrell’s account (*Brit. Fishes*, ii. 262) is, that this is “a rare species,” and he mentions one of “nine inches in length,” as if the known specimens were small. I apprehend, however, that further acquaintance with this variety will modify such opinions. Of those which I saw, the basket contained an enormous pair, stated to weigh upwards of 6 lbs. ! and there were others of different sizes. I have not yet succeeded in procuring any more for comparison, but have been informed that the fish is occasionally taken by the Brighton fishermen, when, during a westerly wind (as they usually sail out *against* the wind, thereby ensuring a speedy return) they direct their boats to that part of the coast nearly opposite to Worthing, which is familiarly known as the Grass Banks. I remarked that the black patches on the back had a longitudinal, not, as in Yarrell’s figure, a transverse direction, but am told that those marks vary, running sometimes from head to tail, sometimes across the body. From experience of the two which I had dressed, I consider the variegated sole not worth eating. I have just learned that this fish is known at Lowestoffe, in Suffolk, where it is caught in particular localities, and deemed good. This is an object for the inquiries of the naturalists of Norfolk and Suffolk. It has been stated to me that the lemon sole (*British Fishes*, ii. 260) is occasionally brought for sale, but hitherto I have not noticed it.—*Arthur Hussey; Rottingdean, October 11, 1851.*

Entomological Localities. By J. W. DOUGLAS, Esq.

(Continued from page 3248).

DARTFORD HEATH.

—— “ The heath with all its varied bloom
And the close lanes.”

Crabbe's Tales.

“ Sublime Tobacco ! which from East to West
Cheers the tar's labour or the Turkman's rest ;

* * * * *

Magnificent in Stamboul, but less grand
Though not less loved, in Wapping or the Strand ;
Divine in hookas, glorious in a pipe
When tipped with amber, mellow, rich, and ripe :
Like other charmers, wooing the caress
More dazlingly when daring in full dress ;
Yet thy true lovers more admire by far
Thy naked beauties — Give me a Cigar !”

Byron.—The Island, Canto ii.

The uncertain appearance of moths is notorious; one day swarming and the next scarcely any to be seen. This variableness is doubtless attributable to atmospheric influences, of which our less fine organs of sense are not susceptible; but it is also certain that moths shrink from some things as much as we do, and experience has taught that it is of very little use to go out for Micro-Lepidoptera by day, or for Noctuæ by night, if the wind blow coldly from the east. *That* is the wind, *par excellence*, that blows nobody good, concerning which it may emphatically be said, “*de gustibus non est disputandum* :” truly the collector may sing with Burns,

“ Of a' the airts the wind can blaw,
I dearly love the west.”

But all strong winds are unfavourable for taking Lepidoptera, whether on the wing or when beaten out of their retreats. At such times we cannot do better than search closely the sheltered side of palings, especially such as have trees to the windward, for out of these the moths will be driven to take shelter on the fence, and they will sit so still that they may easily be taken. Very many Tortrices and Tineæ may be found in this way, as well as Noctuæ and Geometræ.

I confess an east wind is my horror — either cutting one up altogether, or shrivelling one side while the other perhaps is roasting under

a burning sun. As few moths can be found when it blows, the collector may employ his leisure in searching for the larvæ of Tortrices and Tineæ, of which, it may be an encouragement for him to learn, that the greater part is quite unknown. Or he may vary his employment by squatting under the shelter of a hedge or wood, and try the effect of a counter-blast, as James I. might have called it, of his pipe or cigar on the hiding-places of the full-grown objects of his search, who, unaccustomed to such fragrance, will, like a suspicious father in a farce, rush out to see what is the matter. And thus, combining the "utile et dulce," he may, with the glowing embers of the fragrant weed, shed a new light upon Entomology, and show how necessary it is for an entomologist to be a smoker.

Dartford Heath is a sandy, elevated plain, intermediate between Darenth and Birch Woods, and easily accessible by the North Kent Railway viâ Dartford. It is covered with heath (*Erica cinerea*), and not a very promising place for a lepidopterist; but, like some men, the true character does not lie on the surface, or become apparent at first sight, but the more you see of it the better you like it. The lanes leading to it from Birch Wood, Bexley and Dartford, afford very good collecting, but the great harvest is to be reaped from the paling of Mrs. Menett's park, which bounds the western side, always provided the wind is not from the east. Fortunately, the best side of this fence is outwards—not invariably the case with fences—and there is therefore no chance of being interrupted by any tenacious preserver of a feudal right, who thinks more of his pheasants than his peasants;—here, ours is "untaxed and undisputed game."

Some of the gipsy race, over whom we may chance to tumble when intent upon the paling, may request to tell our fortune; but whether the question refers to our present occupation or to things in general, it is better to think we know more than these wanderers, and decline their services accordingly.

The following Lepidoptera have been found here. When not otherwise mentioned, the insect has been taken on the fence. Hosts of other species may be found at different times throughout the summer, but I have not deemed it necessary to mention the commoner ones.

Argynnis Lathonia. In the lane from The Bull, Birch Wood (Ent. Mag. iii. 313).

Lithosia complana. July.

Hadena lutulenta. September.

Catocala Fraxini. (Ent. Mag. iii. 314).

Ellopia fasciaria. June.

- Aspilates citraria*. Flying ; end of May.
Thera firmaria. July and August.
Acasis viretata. May.
Zerene rubiginata. June.
Aleucis pictaria. Where this insect comes from is a mystery. It is found, but very rarely, in the month of April, sitting on the paling. Search has been made for it by beating the over-hanging fir-trees, and it has also been looked for with a light at night, but without success. Nothing is known of its early states, or the food of the larva. The only other known locality for this species is near Colchester, where several once came to a light in a room.
Eupithecia coronata. May.
 „ *pumilaria*.
Chesias obliquata. May.
Spilodes sticticalis. August ; on the Heath.
Stigmonota floricolana. In the lanes from Erith, on maple.
Tinea Cratægella. Hedges ; July.
Ochsenheimeria Vacculella. Among fern, (*Pteris aquilina*) ; July.
Depressaria atomella. Larvæ on broom ; July.
Gelechia maculiferella. Flying ; July.
 „ *Walkeriella*. Among fern, (*Pteris aquilina*) ; July.
 „ *Artemisiella*. Among broom ; July.
Æchmia equitella. On *Sedum acre* ? growing on a barn at Bexley ; July.
Coleophora ———, new species ? On *Artemisia vulgaris* ; July.
Gracilaria omisella. Bred from leaves of *Artemisia vulgaris*, growing in the lane from Bexley ; July.
Coriscium Cuculipennellum. Flying ; May.
Nepticula gratosella. May.
Lithocolletis Scopariella. Broom ; June, (Zool. 2896).
 „ *Ulicicolella*. Furze ; June.

J. W. DOUGLAS.

2, Eton Grove, Lee,
 October 9, 1851.

On the Impalement of Insects on Thorns.—I cannot quite agree with the suggestions (Zool. 2962, 2971) that the impalement of insects on thorns is the effect of accident ; in some cases, it doubtless is so, but in the majority of instances, I am almost convinced that such is not the fact. I have always understood that the red-backed shrike (*Lanius Collurio*) transfixes insects in that way ; and though I certainly have not had quite positive proof of this, I once met with an instance which was almost convincing.

I had shot a female red-backed shrike in a low hedge at Peckham. The bird had attracted my attention by its unsettled and jerking movements on the upper branches. It did not fall to the ground, but rested on the hedge, and on removing it, I discovered, close to the spot where it had been standing, a humble-bee impaled on one of the thorns, and alive, as if it had just been placed there. I do not remember now at what part the thorn had entered, but I perfectly recollect that my full impression at the time was, that the shrike had so placed it. I have three or four times since met with bees impaled on thorns, and once with a specimen of the silver Y moth (*Plusia Gamma*) thus transfixed. These were all single insects; but in the summer of 1849 (I think the beginning of June), on a low whitethorn bush on Shirley Common, near Croydon, I found no fewer than *three* humble-bees impaled, and the remains of *four* more on the ground at the bottom of the bush; the impaled ones were within a space of eighteen inches. I brought them home in boxes, but they have been mislaid, and on looking for them after reading the remarks in the 'Zoologist,' I could find only the three specimens sent with this. With the larger one, it is quite impossible that its situation could be accidental; the thickness of the thorn, and its perpendicular growth, would render it an impossibility for the insect to get thus placed by any movement of its own (the thorn having entered the *upper* part of the thorax), if so, the insect must have been flying directly *downwards*, with its legs *uppermost*, which I believe is *rather* contrary to its usual mode of flight. Besides, the remains of the others on the ground would at once remove such an idea. The question is, how came they there? I still think it was the work of the shrikes. I know they were about the place, as a few days afterwards I procured four eggs, which were taken from a nest found near the spot in question. Is it likely that the bird does not eat *all* the insect, but pulls it to pieces merely to procure the honey-bag? It may find the fixing them favourable for such an operation; and this may account for the parts found on the ground, as it is scarcely likely that the bird would be so clumsy as to drop them while taking them off, or, if such had been the case, to allow them to lie there. Although I have dissected several shrikes at different times, I do not recollect, in any instance, finding any portions of bees; the remains generally consisted of parts of beetles, and in one or two instances the wing-cases of lady-birds. Believing, as I do, that in the majority of instances the insects so found have been thus placed by the red-backed shrike, candour however obliges me to confess that I cannot quite understand the circumstance of the three perfect bees. Had there been but one, and the remains of the others, the case would have been pretty clear, as that one might have been so left from the bird having been disturbed. The spines of the furze being very sharp and thin, it is quite possible that a caterpillar falling from an upper shoot, or a soft full-bodied moth carried by a strong gust of wind, might be impaled on them; but all that I have found (and I think the majority of instances in which they have been discovered) have been on the white and black thorns, the spines of which are in general not sufficiently sharp to make an opening in an insect so tough as the humble-bee, without some little violence being used. If those correspondents of the 'Zoologist' who have found insects (and especially bees) thus transfixed, would send their observations, stating on what thorn discovered, and whether shrikes breed in the locality, possibly something certain may be elucidated respecting this subject, which now seems rather involved in obscurity. At present, without attaching much value to the cases I have mentioned, I think the balance of evidence is in favour of the act being that of the red-backed shrike.—*Geo. Ingall*; 81, *High Street, Borough*.

Captures of Lepidoptera in Buckinghamshire. — I observed several specimens of *Apatura Iris* flying about the tops of the oaks in the woods here last month, but though I procured a pole about twenty feet long for my net, I was unable to take any. Has this insect been observed in Bucks before? *Thecla Quercus* is abundant here, and I was fortunate enough to take two specimens of *Thecla Betulæ*, flying over the low underwood. In June and July I took about a dozen specimens of *Leucophasia Sinapis*, one of *Chærocampa Porcellus*, and two of *Sesia Bombyliiformis*, the latter hovering over the flowers of *Lychnis Flos-Cuculi*. The larvæ of *Chærocampa Elpenor* and *Macroglossa Stellatarum* have been unusually abundant this year; in August I took about sixty of the former, on *Galium uliginosum*, and more than twenty of the latter on *G. verum*. I have also taken the larvæ of *Acronycta Ligustri* plentifully on ash during the last few weeks, in company with that of *Sphinx Ligustri*. — *H. Harpur Crewe; Claydon, Bucks, September 17, 1851.*

Captures of Micro-Lepidoptera near Bristol, in 1851. — The following list of a few of this year's captures may perhaps interest some of the readers of the 'Zoologist.'

Eupœcilia dubitana, *Hüb.*, June 2—28; August 7—20. This is the species recorded (*Zool.* 2933) as *Simplana*? Captured by the railway at the bottom of Dr. Fox's woods, Brislington; where I also took:—

Catoptria Albersana, June 2—16.

Eupœcilia humidana, June 19—28.

Eidophasia Messingiella, June 23, July 1.

Elachista adscitella, *Sta.*, June 25, one. Nearly of the size and appearance of a somewhat faded *Messingiella*.

Eupithecia tenuiata, June 25—28.

Anacamptis Gerronella, June 25 to July 1. This species flies very late in the evening, sometimes near the ground, but more frequently at a moderate height among shallows.

Coleophora Alcyonipennella, June 28.

Eupœcilia notulana, July 5, 7.

The following I met with among broom nearer Keynsham:—

Lithocolletis Scopariella, July 5—August 18. On the wing.

Anacamptis distinctella, July 5—7.

„ *cinerella*, July 7, August 8.

„ *rufescens*, July 7, August 8.

Œcophora Lambdella, July 7—23.

Depressaria atomella, July 23, August 20.

Anacamptis Mulinella, August 7—18.

Elachista Regificella, August 12—20. In Mr. Stainton's 'Supplementary Catalogue,' this is said to be "taken also by Mr. Vaughan," — (p. 9). This may mislead some into the idea of a *third* locality. Mr. Vaughan took his specimens in company with me at Brislington.

Pseudotonia seneclæana, August 20, 21. This was flying in tolerable abundance on the 21st, among grass at the bottom of Dr. Fox's woods, but wasted.

In a small plantation at the foot of St. Vincent's Rocks, and near the road that leads to the Clifton turnpike, I obtained the following:—

Eupithecia ——— ? unnamed, June 30—July 3.

Emmelesia holosericearia, June 30—July 3.

Ephippiphora trigeminana, June 30—July 3.

Anacamptis subocellea, June 30—July 3.

Lithocolletis Alnifoliella, June 30—July 3.

Elachista propinquella, *Sta.*, June 30.

Pterophorus baliodactylus, June 30.

To these may be added *Opostega crepusculella*, two on July 4th at Tockington, Gloucestershire, and one on the 23rd at Brislington. — *John Sircom, jun.*; *Brislington, September 16, 1851.*

Notes on Depressariæ.—*Depressaria nervosa, Sta. Cat.*—I have bred this sparingly, from larvæ found in the umbels of *Cicuta virosa*, in the beginning of July, going into pupæ at the end of the month, and emerging in the first week of August. The larva, both in appearance and habits, approximates closely to that of *Depressaria Heracleana*, but it is more slender, its leaden and yellow-buff colours are much richer and more distinct, and, more particularly, the black tubercles are *annulated with white*. I have found the moth also, on sugar, within these few days. *Depressaria ciliella, Sta. Cat.*—This, too, I have been breeding from the larvæ, which I took from *Angelica sylvestris*, and rather to my surprise, feeding on both the leaf and the umbel, convoluting a portion of the side of the former for a retreat, and burying itself in triturated flowers of the latter, for the same purpose. The leaf-feeders, however, appeared in the beginning of July, whereas the denizens of the umbels were not found until the end of the month, and necessarily so, as the plant was not sooner in blossom. I should observe, that although the *Angelica* grows profusely here, yet the locality wherein I found the insect was confined to a radius of about a quarter of a mile, nor could I meet with one specimen elsewhere. Of all the larvæ I know, this is by far the most agile; you can scarcely touch his abode before he rushes ("*creeps*" would be an inadequate term) out of it at railway speed. In fact, I, at first, lost many owing to this circumstance, and fancied the leaves had been empty, but on discovering my error I resorted to the plan of holding my net under the spray or flower before I began to search it, and I soon found the good effect of this mode, as they generally dropped into the net, and I had them safe. It is a pretty, very slender, rather bright green caterpillar, with darker duskyish stripes down the back and sides, and its tubercles are not blackened. I was so unlucky as to lose all but seven or eight of my larvæ, the others having escaped through a crevice in the feeding-glass. They remain about a month in the pupa state. I should never have thought them distinct from *Depressaria applana*, had not Mr. Stainton's Monograph enlightened me; and it is really a matter of difficulty with me now, to perceive any difference, except, perhaps, in size. My pursuit of game of a larger kind since the 1st inst., has interfered with my attention to the Lepidoptera, but by the time I shall have got through the thick of my sport in that way, the ivy will be in bloom, and I shall hope to reap therefrom a harvest for the benefit of my correspondents.—*J. Allen Hill; Almondsbury House, September 16, 1851.*

Occurrence of Sesia fuciformis, Macroglossa Stellatarum, and Sphinx Convolvuli in Scotland.—In the descriptions of British moths by Mr. Duncan, in the 4th volume of Jardine's 'Naturalists' Library,' it is stated that the broad-bordered bee hawk-moth (*Sesia fuciformis*) has not been discovered further North than York, (p. 169). I beg to inform you that in the month of July, 1826, I caught in my garden a few specimens of this moth, two of which I still have in a state of excellent preservation. As

at the least motion they darted away with the rapidity of an arrow, it was after much labour and caution that I succeeded in capturing these rare Sphingides. I likewise caught at the same time two specimens of *Macroglossa Stellatarum*. During the month of September, in the same year, I captured the rare and beautiful *Sphinx Convolvuli*. — *Thomas Durham Weir*; *Boghead, by Bathgate, Linlithgowshire, August 26, 1851.*

Occurrence of Trochilium Chrysidiforme in Hampshire. — About a month since a specimen of *Trochilium Chrysidiforme* was taken in this neighbourhood. — *Chas. Barron*; *Haslar, September 29, 1851.*

Hydræcia Petasitis. — My friend, Mr. Noah Greening, of Warrington, has taken several fine specimens of this species near that place; and as it may be interesting to some readers of the 'Zoologist' to know something of the habits of this recently discovered species, I send a few particulars from his letters. "The larvæ feed on the roots of the butter-bur (*Tussilago Petasites*), and when full-grown leave the plant and change to pupæ in the earth. The perfect insects appear early in September, and begin to fly about half-past 7 o'clock in the evening. Their flight is heavy and slow, and they are easily taken when they fly above the leaves, but as they usually fly under the leaves near the ground, they are soon lost sight of. Their time of flight is only about half an hour." — *Henry Doubleday*; *Epping.*

Occurrence of Melitæa Cinxia &c. near Dover. — During a short tour along the South coast in June last, I had the good fortune to find, near Dover, *Melitæa Cinxia* and *Setina irrorella*, in some plenty, both in the same locality. I have still some specimens of both species, which I shall be happy to send in exchange to any collector who may still want them. — *F. M. Spilsbury*; *Sommershall, Uttoweter, October, 1851.*

Capture of Heliophobus hispida, Tr. — Some six or seven years back, T. Lighton, Esq., captured two specimens of this beautiful species in the Isle of Portland, it being then new to England. I have long had a desire to search after it myself, but until this autumn had no opportunity of doing so; however, on the 21st of last month, I visited the Island expressly for the purpose, and in three days and nights, with the assistance of two men, succeeded in finding fifteen fine specimens sitting on the rocks. I hope to get a few more, having offered a liberal price for all that can be procured; so if they arrive, I shall have them to exchange. I also captured *Epunda lichenia* and *Aporophila australis*, the latter at sugar. — *Samuel Stevens*; *24, Bloomsbury St., October 14, 1851.*

Capture of Bembidium Schuppelii in the North of England. — When in Cumberland in June, 1849, I took on the banks of the river Irthing, a single specimen of a small *Bembidium* unknown to me, and which I transmitted to M. Duval, of Paris, who pronounces it to be *B. Schuppelii, Dej.*, a species not recorded as British. — *Thos. Jno. Bold, Angus' Court, Bigg Market, Newcastle-on-Tyne, Oct. 19, 1851.*

Importation of Bruchus rufimanus into Newcastle-on-Tyne. — In the latter part of September, 1850, a cargo of 1000 qrs. of large beans, imported here from Sicily, was found to be much infested with *Bruchus rufimanus, Sch.*, in the stages of larva, pupa, and imago. Many of the beans had from three to five tenants. The perfect insects are very active: when set free, they would simulate death for a second, then nimbly regain their legs, running with a great deal of agility, taking wing quickly from any slight prominence, and flying with the rapidity and ease of a *Cicindela*. They walked on the glass of windows, much the same as *Diptera*, running up, down, or across with equal readiness. I kept some of the beans in a glass vase for some months during the

winter, but found that the insects only survived for a few weeks after development, and in no case did I see them attempt to feed upon the beans. A gentleman of my acquaintance planted a number of the beans, and found their vegetative powers but little impaired by the drilling they had undergone. Some of the millers' men were much astonished to find the meal, after passing through the stones, apparently alive, and the "queer flies," as they termed them, taking wing and flying about the mill in thousands.—*Id.*

Tenacity of Life in Calandra granaria.—Having been often told by the loft-men that it was impossible to drown the corn-weevil (*Calandra granaria*) I procured a large supply, determined to submit them to a watery ordeal. The result showed me that they are able to resist the action of water long enough for transportation to other countries by ocean currents, should we be at a loss to account for their dispersion by other means. On the 16th of December last, I put the whole of the weevils into a glass, and covered them with water. When I took them out, the weather being cold, I placed them on a warm mantel-piece. After sixteen hours' immersion I took out fourteen weevils: in a very short time six were moving, the remainder having been swept down. On the 18th I took out twenty-two, after forty-five hours' immersion: in an hour the whole were quite active. On the 19th, of eighteen taken out, after being seventy hours under water; five walked off in two hours, eight showed symptoms of life, the others being apparently dead. On the 20th nineteen were taken out, after being ninety-two hours in the water; of these, five revived in an hour, and at the end of two hours the whole were quite active. I did not take out any more until the 23rd, when, towards evening, I took out eleven, which had then been a hundred and sixty-four hours in the water; of these, four were moving in three hours, and the following morning I found the whole alive, although not very active. On the 26th, after ten days' steeping, ten were taken out, but only three of them revived, and those not till the following morning. On the 31st, seventeen were taken out after fifteen days' immersion; six of them revived, but were forty-eight hours in doing so, and then were exceedingly languid, moving about as if intoxicated. The remainder I allowed to remain in the water until the 7th and 8th of January, but those, when taken out, appeared to be all dead.—*Id.*

Capture of Astynomus Edilis at Newcastle.—On the 29th of September last, I had a living recently developed specimen (a female) of *Astynomus Edilis*, *Linn.*, brought to me, which had been taken on board a grain-laden ship, discharging in our port from Stettin. Two others were seen, but allowed to escape. This is so far interesting, as it plainly shows how our Fauna is increased by our mercantile intercourse.—*Id.*

Proceedings of the Zoological Society.

Monthly General Meeting, October 2, 1851.—JOHN E. GRAY, Esq., V.P., in the chair.

Prof. E. Forbes and W. O. Lamond, Esq. were elected Fellows.

The Rev. B. Winthrop, F. I. Bladon, Esq., and W. R. Crawford, Esq., were proposed as candidates for the Fellowship.

The Report of the Council stated that several interesting animals had been added to the Menagerie, and that a new building was in progress for the reception of the

Elands bequeathed by the late Earl of Derby. Mr. R. Hill, Corresponding Member, had forwarded some reptiles from Jamaica, of which one serpent was entirely new to the collection. Capt. Fulton, R.N., and Mr. H. Manifold, had also presented valuable additions to the reptile room, which has been greatly improved during the present summer. The increasing interest with which this branch of the garden establishment is visited, has determined the Council to provide for its extension in another building, which will be completed in the course of the winter.

The number of visitors in September exceeded those of the corresponding period of 1850, by 74,217.—*D. W. M.*

Proceedings of the Entomological Society.

October 6, 1851.—J. O. WESTWOOD, Esq., President, in the chair.

Monsr. Victor Signoret and J. McGillivray, Esq. were present as visitors.

The following donations were announced, and thanks ordered to be given to the donors:—‘Proceedings of the Literary and Philosophical Society of Liverpool,’ No. 6, 1849—51; by the Society. ‘Catalogus Systematicus ad Cramerum, auctore Henrici Verloren;’ by the Author. ‘Mémoires de la Société de Physique et d’Histoire Naturelle de Genève,’ tome xii. 2^{de} partie; by the Society. ‘Journal of the Royal Agricultural Society of England,’ vol. xii. part 1; by the Society. ‘Memorias de la Real Academia de Ciencias de Madrid,’ tomo i. parte 1: and ‘Resumen de las Actas,’ ditto, 1849-50; both presented by the Academy. ‘Degli Insetti Carnivori adoperati a distruggere le specie dannose all’ Agricoltura di Antonio Villa,’ Milano, 1845: ‘Osservazioni Entomologiche durante l’Eclisse del 9 Ottobre, 1847, di Antonio Villa;’ both by the Author. ‘Entomologische Zeitung,’ for September; by the Entomological Society of Stettin. ‘The Zoologist’ for October; by the Editor. ‘Philosophical Transactions of the Royal Society,’ 1850, part 2, 1851, part 1: ‘Proceedings,’ ditto, No. 75: ‘List of Members,’ ditto, 1850: all by the Society. ‘Annales de la Société Entomologique de France,’ tome viii. 1850; by the Society. ‘Bericht über die Arbeiten der Entomologischen Sektion (of the Silesian Society of Natural History),’ 1850; by the Society. ‘Catalogue of the Mammalia in the Museum of the East India Company;’ by the Hon. Court of Directors of the Company. ‘The Athenæum,’ for August and September; by the Editor. A number of insects, chiefly Coleoptera, collected in Renfrewshire; by Mr. Young, Paisley. A fine series of varieties of *Orthosia instabilis*; by Mr. Barlow.

John Curtis, Esq., F.L.S., and Captain H. Lodder, 47th Infantry, were balloted for and elected Members of the Society.

Mr. S. Stevens exhibited a fine series of the hitherto very rare *Heliophobus hispida*, taken sitting on rocks in the Isle of Portland, between the 20th and 27th of September; *Aporophila australis*, from the same locality; *Eupithecia ultimaria*, *Ramb.*, *Boisd.*, *Dup.*, a new British species taken at Dover in the middle of September; a specimen of *Deiopeia pulchella*, taken in Somersetshire in 1847; and a specimen of *Claviger foveolatus*, taken near Dorking in September.

Mr. Edwin Shepherd exhibited a new species of *Peronea*, reared from larvæ found on *Spiræa Ulmaria*.

Mr. Augustus Sheppard exhibited a pupa of *Saturnia Carpini* in its cocoon, which latter was rounded internally and externally, instead of being of the usual egg-shape;

one side, that by which it had been affixed to the breeding-cage, being open and showing the pupa.

Mr. F. Smith exhibited a mass of cocoons of *Aphomia sociella*, found on the coast of the Isle of Wight.

Mr. Weir exhibited many species of *Depressaria*, lately captured, and a specimen of *Gelechia lentiginosella*, reared from a caterpillar which fed on *Genista tinctoria*.

Mr. W. Thomson sent for exhibition a box of *Coleoptera*, collected at Morocco by Mr. Drummond Hay, containing, among other interesting insects, a specimen of the British species, *Nebria complanata*.

Mr. Janson exhibited a box of fine *Coleoptera* from Himalaya.

Mr. Adam White exhibited a copy of a manuscript on spiders, by Mr. Joseph Dandridge, or Daindridge, an apothecary, who lived in Moorfields in the days of Petiver and Sloane. He was a keen collector of British spiders, and wrote descriptions of them, which were subsequently published by Albin in 1736. He found "above a hundred and forty kinds of them in England only," (see Bradley's 'Works of Nature,' p. 131, 1721). Mr. W. mentioned a New Zealand genus, and a curious species of New Zealand spider, named after this indefatigable collector; he also pointed out the clear manner in which Lister and Dandridge had described the habits and markings of the British spiders, directed the attention of the entomologists present to this interesting group, and requested them to collect specimens. He mentioned that Mr. Blackwall had commenced in the 'Annals and Magazine of Natural History' a series of papers on British spiders, and said that the arachnologist of Denbighshire had undertaken for the Ray Society a volume on the subject, which would include the descriptions and figures so admirably detailed and drawn by his friend Mr. Templeton, when residing near Belfast, a manuscript which Mr. W. some years ago urged the Zoological Society to publish. He alluded to the labours of Dr. George Johnston, of Berwick, on the mites of Berwick, published in the 'Proceedings of the Berwickshire Naturalists' Club;' and concluded by reading an extract from a MSS. journal of his own, written in France in 1841: this extract referred to Walckenaer, Fabricius, and Latreille, and their labours in Arachnology.

The following communication from Mr. H. W. Newman, of Stroud, was read:—

"In the 'Proceedings' (p. 93) I find my friend and brother member of the Society, Mr. Smith, has criticised my paper on the Bombinatrices, and seems to doubt the veracity of the statements respecting the drones; and I do not wonder at this, for any casual observer may come to the same conclusion. This very summer I have a fine nest of *Apis lapidaria* in my kitchen-garden, at the foot of the wall, which, for the last six weeks, I have watched at nearly all hours; and though they have had a traffic of the average of three per minute entering, I have *never seen one male go in*.

"The wild bees are of an inoffensive character, and not in sufficient numbers (like the hive-bees) to expel the males; and the Creator has ordained that they shall leave the nest voluntarily and never return, they not having the same 'organ of locality' as the workers, for they make no observation like the workers: and yet they know their way to flowers, and have certain haunts. I watched one of the *Apis hortorum* a few days ago come exactly every three minutes and a half, for two hours, to two spots within view, hover about them as if going to settle, and then move on somewhere else. I can assure Mr. Smith that it cost me many months' observation, for a dozen summers at least, before I could fathom their pastime, but at last I found it out, as I believe firmly when the males of the different species leave their nests, the 'Great

Architect' has ordained their round of visits as an occupation. Each species has a different flight, but *Apis hortorum* is by far the easiest to discover going its rounds to the different haunts, as it flies very near the ground, and may be traced to some five or six places, where it appears to stop. The other species vary their flight through trees and bushes, but invariably keep the same track, generally from 10 or 11 o'clock till about 3 or 4, in fine sunny weather.

"The whole of the *Bombinatrices*, about the beginning of September, begin to get feeble and slow; they lose their wings in many instances, and the females, many of which leave the nest, look out for dry and convenient holes in the ground and elsewhere to pass the winter in a torpid state.

"Now of the moving habit of the drones Mr. Smith took no notice, and yet this is one of the things I thought worthy of remark. I have pointed it out to several of my friends many times, and I certainly think this eccentricity of the male a curious addition to their true history.

"I can assure Mr. Smith that I shall be most happy next summer to meet him or any other lover of the genus, and prove the whole of this. I will only add that I have made the history of these insects my study for fifty years, and have taken at least 500 of their nests. I have also watched their nests in the fields for days and weeks, and had my observations confirmed over and over again.

"The great Mr. Kirby has himself said 'that the *Bombinatrices* are in many instances so unlike (the males and females), that they may be mistaken for another species, and that unless by intense application it is quite impossible for any one person to be perfect in the history of more than one species.' And again, 'I am by no means certain that I have not, in more instances than one, described the sexes under different names; until all can be traced to their *nidi* this is not easy to be avoided.'*

"Mr. Smith's 'crowning remark' on Mr. Kirby, I cannot find in his work."

Mr. Smith then made the following observations:—

"When, at the June Meeting of this Society, a paper by Mr. H. W. Newman on some species of humble-bees was read, I, having paid some attention to their specific differences, and also to their economy, felt it incumbent on me to offer to the Society a few remarks as the results of my experience. In differing from Mr. Newman respecting the habits of the drones, or males, I gave but the result of my observations, which induced me to adopt a contrary opinion; this opinion, as I stated at the time, was drawn from circumstantial evidence, and admitted even of the possibility of error; but I felt an additional persuasion to its adoption from having the support of Mr. Kirby, who, in his '*Monographia Apum Angliæ*' (ii. 367) says, 'I have myself seen this insect entering the *nidus* of *Apis lapidaria*; and what appears to do away with all doubt upon the subject' (of its being the male), 'I saw this insect in the collection of the celebrated Peter Collinson, with a memorandum affixed to it, that he had seen it connected with *A. lapidaria*.' Mr. Newman now objects to my observations, at which I am surprised; because in making observations, it should be the sole object of the naturalist to elicit truth, and he should always bear in mind that 'Nature is communicative at intervals only, and she must consequently be assiduously watched;' still it is only to few that she raises the veil.

"Since making the remarks alluded to, I have had the good fortune to have my

* Kirby's '*Monographia Apum Angliæ*,' 208.

opinion confirmed by direct observation: the particulars are embodied in my notes on the nest of *Bombus Derhamellus*, which, with permission, I will read to the Society. Before doing so, however, I will make one or two remarks on other points connected with the history of humble-bees as recorded by Mr. Newman. I cannot bring myself to coincide in the opinion that males have prescribed rounds, from which they never deviate, keeping in the same track; because I have always found these, as well as insects generally, influenced by the direction of the wind, the sun, and the situation of such flowers as they most frequent; and Mr. Newman's theory would tell against his remark, that the males have not the organ of locality developed as in the females and workers.

"With regard to the localities of *Bombus lapidarius*, which Mr. Newman never saw in Scotland, I made it a point to inquire of residents in that part of the kingdom. From Mr. Little I received the whole of his black-and-red humble-bees captured in various parts of Scotland, and all but two were *B. lapidarius*.

"Mr. Newman limits the number of species of *Bombus* to four, considering all others as mere varieties: this is certainly incorrect; I am acquainted with twenty-two distinct species found in Great Britain. In differing from the author of the paper on the habits of the Bombinatrices in some particulars, I should be sorry indeed if he should suppose that I doubted the veracity of his statements; so far from that, I fully appreciate the value of his remarks on their general history, and also on the various particulars of numbers of the different species inhabiting the same nest, their modes of construction, times of appearance, &c.: but I differ from him in the conclusions which he draws from his observations, and can see nothing to uphold the assertion that 'Divine Wisdom has deprived them (the males) entirely of the power or faculty of returning to, or finding the nest.'

"The following notes, in connexion with the observations of Mr. W. H. S. Walcott, will, I think, prove conclusive on that point.

"NOTES ON THE NEST OF *BOMBUS DERHAMELLUS*.

"On the 2nd of August, whilst walking at the side of a wood at Hampstead, my attention was attracted by a *male* humble-bee which was skimming over a bank. It suddenly alighted and disappeared: on examining the spot where I lost sight of it, I found a track of moss, about nine inches long; this was the covered way to the nest, which, together with its contents, I carefully secured for examination. The species was *Bombus Derhamellus*. The nest was about eight inches long and six broad. At this period of the year the labours of the community were over; with the exception of about half a dozen females, all the bees had quitted the cocoons; in six cells I found a small portion of honey. The total number of cocoons was 187; judging from the differences in the sizes of these, I consider 107 as being those of workers, 44 those of males, and 36 those of females. In the nest I found thirteen females (six others were subsequently developed), fourteen males and two workers. The mass of comb was of an irregular form, the cocoons being spun one over the other, that is to say, the females had spun a layer of cocoons on the top of some of those of the workers, those of the males being intermixed with them. Reaumur says the pupa is placed with its head downwards, and makes its way out at the bottom of the cocoon; in my nest the case was exactly the reverse. The females were all in fresh and beautiful condition, the mother bee, or founder, having probably perished some time previously, when the process of depositing her eggs was completed.

"The nest swarmed with the *Acarus* with which humble-bees are so much infested; the larvæ of *Volucella bombylans* were also very numerous, and in all stages of growth, and I reared two or three perfect insects from them. I also found the larvæ, pupæ, and perfect insects of *Cryptophagus Lycoperdi* in considerable numbers. The larvæ of a *Tinea* (*T. Sarcitella*) were also very numerous; from these I obtained the perfect insect. I also found three or four specimens of *Antherophagus glaber*.

"The immature larvæ of *Volucella* were plentiful, but on what they would feed I cannot determine, there being neither larvæ nor pupæ remaining. I observed them to frequent those cells which contained honey, and I think, notwithstanding they are said to be insectivorous, that they feed also on the honey and wax: on the latter, the *Acari* undoubtedly partly subsist. The larva of *Tinea Sarcitella* feeds on the cocoons themselves: a number of these moths appeared in a perfect state at intervals, and I observed the larvæ in the empty cocoons of the bees in all stages of growth. The larvæ of *Cryptophagus* I found also in the honey and wax; when full fed, they bury themselves in the ground, and soon appear in the perfect state.

"Since writing the above notes, I have received a letter from Mr. Walcott, of Bristol, a gentleman who has made the bees a particular study, and is well acquainted with the genus *Bombus*. He says, 'In the last week in August, I found a nest of *Bombus Derhamellus* on our Downs; it was at least a hundred and fifty strong. In watching the nest, the males re-entered it with the neuters; but, I should observe, that the females had not appeared, this strengthens what I have lately supposed, that the males continue to re-enter the nest until the females are out, after which they forsake the nest. The bees invariably make their exit from the top of the cocoon; their mode of proceeding is this: a note or hum being heard from the encased bees, both males and neuters hasten in a body, clustering themselves as close as possible on and about the cell, either to soften the wax on the cocoon, or to give encouragement to the encased bee to make the great effort of delivering itself; and immediately on the bee making its exit from the cell, it hastens to the old cocoons containing honey to feed, it appearing much exhausted by its late effort. All the masses of cells that I have seen have been placed upwards, but should a bee select a hole somewhat circular and confined, there I think the bee would make her cells not only on the ground surface, but as they increased would go on until some were placed downwards; but this would be an extreme case, and form an exception to the general rule.'

Mr. Stainton exhibited a species of *Lithocolletis*, which he had hitherto confounded with the true *L. Frölichella*, but which was yet quite distinct; and read the following note:—

"Mr. Allis suggested to me last December, that it was not improbable we had two species under the name of *Frölichella*, and a further examination of more specimens has convinced me of the correctness of his suggestion. Naturally, on first hearing of *L. Nicellii*, my idea was that it would prove to be our other species, but in this I was mistaken. Both are indeed smaller than *Frölichella*; but whereas *Nicellii* is paler than *Frölichella*, our new species is darker.

"For this species I have much pleasure in proposing the name of *Dunningiella*, in honour of Mr. J. W. Dunning, of Leeds, whose extreme quickness and perseverance give promise of great doings in that branch of science called Micro-Lepidopterology.

"*L. Dunningiella* is smaller and darker than *Frölichella* (yet not so small as *Nicellii*), the anterior wings are narrower, especially above the anal angle, where in *Frölichella* they are very broad; the black scales of the apex of the wing are also more

collected, thus resembling *Nicellii*, and the hinder marginal line is much more distinct and darker than in *Frölichella*, where it is barely perceptible.

"From *Nicellii*, fine specimens of *Dunningiella* may be readily distinguished by their dark colour; worn specimens are less easily separated, but the longer and narrower anterior wings, less brilliant markings, and the clouded appearance of the ground colour, are sufficient characters to enable one eventually to separate them.

"*Dunningiella* was the species I described in the '*Zoologist*' (2088), under the name of *Frölichella*, and is in most collections under that name. It probably is attached to hazel or oak.

"Of the true *Frölichella* I have a specimen taken 'among alders on Ockham Bog, near York, May 31, 1849,' (*Zool.* 2897)."

Mr. Stainton read a translation from the Silesian '*Bericht über die Arbeiten der Entomologischen Sektion*' for 1850, of Professor Siebold's "Remarks on the *Psychidæ*." In this paper, Siebold alludes to a former suspicion of his that "alternation of generation" did not occur among the *Aphides* only; and affirms that he is now certain the same phenomenon occurs among the *Psychidæ*, he having discovered it in the *Taleporiæ*. He had particularly investigated the history of *T. Lichenella*, *Zell.*, and found that for several generations fertile eggs were produced by the females (or *nurses* as under these circumstances they are called), without male intercourse.

It had also been observed that from some spiral cases found in Germany and Italy, apparently belonging to a *Psyche*, nothing but vermiform females were produced, which again laid fertile eggs without male intercourse; and indeed the male of this species was not hitherto known.

Mr. J. E. Gray expressed his dissent from the theory of "alternation of generation," and cautioned young entomologists against believing in such a doctrine because it was advocated by a physiologist of so great a reputation as Siebold.

The President observed that M. Guérin had known an example of a female *Bombyx Mori* having produced fertile eggs without male intercourse; and it was recorded that a similar circumstance had occurred among the *Sphingidæ*.—*J. W. D.*

Proceedings of the Society of British Entomologists.

October 7, 1851.—Mr. HARDING, President, in the chair.

The only novelties exhibited as having been taken during the past month were *Hadena lutulenta* and *Aplecta occulta*, taken by sugar at Darenth; *Hadena Æthiops* from the Fens, exhibited by Mr Harding; *Aglossa cuprealis*, taken on a house-top in the City.

It was remarked in the course of a conversation, that out of a hundred specimens of *Colias Edusa* taken during the present season, not more than nine were females, or in the proportion of ten males to one of the other sex. The remarkable number of *Vanessa Cardui* was noticed by several members, as well as the variety of places in which they were seen. Two specimens were observed flying in the enclosure in Lincoln's Inn Fields, and great numbers in the fields near Highgate; and at the latter place the larvæ were most abundant.—*J. T. Norman.*

Notes on the Zoology of California.

Communicated by JOHN HENRY GURNEY, Esq.

HAVING just received the following notes on the animals of California, from a friend of mine who is resident at Monterey, in that country, I beg to forward them for insertion in the 'Zoologist.'

J. H. GURNEY.

Easton, Norfolk, October 24, 1851.

The elk is found in great numbers in the San Joaquin and Sacramento Valleys. It is a beautiful animal. A gentleman informed me the other day, that when he first came into the country six years ago, he saw one of the grandest sights that a man's eyes could light upon. About 3 o'clock of a summer's afternoon, he came in view of the plains of the Joaquin, as you travel from the ocean. The view from hills 1000 feet high, and the plains (flat lands), as far as the eye could see, were covered with immense herds of the noble elk. This animal has immense antlers, and you can imagine the effect of two thousand of them at one view, and entirely in a state of nature, that is, undisturbed by the hunter.

There are three or four kinds of deer, also antelopes.

In the neighbourhood of the Tula lakes, immense bands (sometimes said to contain a thousand) of wild horses roam without a master. They are considered by the Californians as stock escaped from the settlers since the settlement of the country in 1770.

Hares and rabbits are very plentiful, as well as innumerable ground squirrels, which are exceedingly annoying to the farmer.

Since the discovery of gold, immense numbers of the common rat have been imported in the ships arriving, and they have now become exceedingly numerous and annoying, and will, I have no doubt, at no distant day, be destructive to the crops.

Beavers are sometimes found. In former days they used to be very numerous in the Joaquin and Sacramento Valleys.

Black and grisly bears are abundant in the hills and mountains throughout the state, and are very destructive to young stock.

The wild cat and a kind of panther are also found in the mountains.

The Coyote or fox is very numerous, and, with the common gray wolf, is very destructive to young cattle and horses.

We have also a mole, with fur finer and softer than the best Genoa velvet: also the Gopher, a kind of mole or earth-rat.

The kangaroo rat is found in the Sacramento Valley, but I have never seen it.

The fur-seal and river-seal are found.

The common sea-seal or elephant is very numerous on our coast ; also the fin-backed and other species of whale.

Eagles of two or three kinds are found.

Many kinds of owls are known, a small one burrows in the ground.

The red-headed buzzard is found in every part of California.

A great variety of hawks are found ; the blue jay also occurs.

Magpies of a different kind from those of England and the Atlantic States abound ; the beak is yellow and their wings are tipped with white.

The common crow is found in every part of California.

The sociable blackbird (Chenete) is very common, and is very bold. It is found in all parts of the State, sometimes in large flocks of 2000 and 3000.

The chimney-sparrow is very common from April to August, and builds its nest of earth under the eaves of the houses.

A red-breasted linnet with a pretty note is known.

The migratory swallow builds under the eaves of houses.

The humming-bird is sometimes found but is not very common.

The dove is found ; and it is said that this year is the first appearance of the wild pigeon in California : they came into our neighbouring woods this month.

There is a bird here which lives in the squirrel-holes in the ground, and cannot fly, but runs as fast as a dog. It is about the size and colour of a partridge, but not so stout ; it is called the Cotoke.

A small species of pheasant or partridge, with a tuft, is very common in the under-bush : its Spanish name is Coronice.

The sand-hill or blue crane, in Spanish, Gruyares, is also found.

From the month of November to April millions of wild geese abound.

The water-duck abounds in all wet and swampy places ; and the waters of California swarm with all kinds of sea-fowl, in greater numbers than I have seen elsewhere. The pelican is found here ; and there are twenty different kinds of sea-birds on our immediate coast around Monterey.

The rattle-snake is very common in some parts of our State.

The horned frog is found in all dry and sandy districts.

Several species of butterfly are known.

Grasshoppers are very common on the Bay of San Francisco, and very troublesome and destructive.

The honey-bee is not yet known in California, although the abundance of flowers would seem to indicate their necessity.

A species of tarantula is known, as well as a kind of wasp, its antagonist.

The shark and dog-fish are found in the coast waters.

In the spring of the year millions upon millions of salmon ascend every river in the country, and furnish abundance of food to the people, particularly the Indians.

Sardines are found in immense numbers on this coast in the spring, and afford an abundant and delicate article of food.

Fish are said to be abundant in the Tula lakes.

The shores of California furnish an immense variety of shell-fish of the most delicious kinds: the Almeas or mussel, the Avelone, the date-fish, &c. &c., as well as the star-fish, are very abundant.

There are five distinct varieties of shell-fish found in the soft clay-stone of Monterey; and fossil shells and other remains are very common in California.

Wolves suckling Children in the Romulus and Remus style.—Colonel Sleeman told me one of the strangest stories I ever heard, relative to some children, natives of this country (Oude), carried away and brought up by wolves. He is acquainted with five instances of this, in two of which he has both seen the children and knows the circumstances connected with their recapture from the animals. It seems that wolves are very numerous about Cawnpore and Lucknow, and that children are constantly being carried off by them. Most of these have of course served as dinners for their captors, but some have been brought up and educated after their own fashion by them. Some time ago, two of the King of Oude's sowars (mounted *gens d'armes*), riding along the banks of the Goomptje, saw three animals come down to drink. Two were evidently young wolves, but the third was as evidently some other animal. The sowars rushed in upon them and captured the three, and to their great surprise found that one was a small naked boy. He was on all fours like his companions, had callosities on his knees and elbows, evidently caused by the attitude used in moving about, and bit and scratched violently in resisting the capture. The boy was brought up in Lucknow, where he lived some time, and may, for aught I know, be living still. He was quite unable to articulate words, but had a dog-like intellect, quick at understanding signs, and so on. Another *enfant trouvé* under the same circumstances lived with two English people for some time. He learned at last to pronounce the name of a lady who was kind to him, and for whom he showed some affection, but his intellect was always clouded, and more like the instinct of a dog than the mind of a human being. There was another more wonderful but hardly so well authenticated story of a boy who never could get rid of a strong wolfish smell, and who was seen not long after his capture to be visited by three wolves, which came evidently with hostile intentions, but which, after closely examining him, he seeming not the least alarmed, played with him, and

some nights afterwards brought their relations, making the number of visitors amount to five, the number of cubs the litter he had been taken from was composed of. I think Col. Sleeman believed this story to be perfectly true, although he could not vouch for it. There is no account of any grown-up person having been found among the wolves. Probably after a certain time they may have got into a set of less scrupulous wolves, not acquainted with the family: the result is obvious.—*Sir R. I. Murchison in Ann. Nat. Hist.*

Occurrence of the Osprey (Falco Haliaeetus) at the Land's End.—A very fine young bird of the year of this species was killed during the present week from this locality. All the feathers on the back are deeply edged with yellowish white.—*Edward Hearle Rodd; Penzance, November 6, 1851.*

Occurrence of the Great Gray Shrike (Lanius Excubitor) and the Reed-wren (Salicaria arundinacea) at Scilly.—A female specimen of the great gray shrike was killed during the present week at St. Mary's, Scilly; and the reed-wren was also obtained. These birds are of rare occurrence in this county, and the latter bird was only included in our Fauna a year or two since, when several were obtained from the Scilly Isles.—*Id.*

Occurrence of the Fire-crested Regulus (Regulus ignicapillus) at Scilly.—I have reported to you from time to time the occurrence of this species in several localities in the West of Cornwall, but never I believe from the Scilly Isles. I can now, however, do so, having examined an interesting specimen of an adult male bird, which was shot a few days since by Augustus Pechell, Esq., a relative of the Lord Proprietor of the Islands, to whom we are also indebted for the opportunity of recording the ortolan bunting and whiskered tern as addenda to our Cornish Fauna. The specimen of the fire-crest now under notice, exhibits all the characteristic markings of the species, and if I should notice any one thing in its general appearance, it would be the remarkable yellowish green colour which particularly pervades the sides of the neck, and which, as you may be aware, is wanting in its congener, the gold-crest. I cannot detect any difference in the comparative lengths of the tail in the two species; and I mention this merely as the point has been given as one of distinction between the two species, that of the fire-crest being represented as longer than that of the gold-crest.—*Id.; November 16, 1851.*

Occurrence of Richard's Pipit (Anthus Richardi) at the Scilly Isles.—A specimen of this pipit was shot a few days since at St. Mary's, which I have examined in the flesh. It was flushed from a swampy piece of ground, and resembled in flight and manners as much those characters in the wagtails as in the pipits. It is now some years since any have been noticed here.—*Id.; October 28, 1851.*

Flight of Woodcocks at the Land's End.—We have had several days' continuance of the wind from the East, which yesterday brought a large flight of woodcocks in the Land's End district.—*Id.*

Occurrence of the Yellow-backed Whidah Finch (Vidua Chrysonotus, Swainson), in England.—I am enabled, through the kindness of the Rev. W. S. Hore, to inform you of the capture of an example of one of the Whidah finches in this country. The bird, a female, was shot in the month of September upon Otmoor, in this county, and exposed for sale, together with other small birds, in a poulterer's stall in the market-

place at Oxford, where it was purchased by Mr. Hore. It is in an intermediate state of plumage, not having thoroughly acquired its adult dress, and is supposed to be the yellow-backed Whidah finch, the *Vidua Chrysonotus* of Swainson. I will shortly send you a more detailed account of this addition to the "Birds of Oxfordshire," and trust that the above imperfect notice may be in time for insertion in the present volume of the 'Zoologist.'—*A. Matthews; Weston-on-the-Green, November 19, 1851.*

Note on the Autumnal Moults of the Red-throated Diver.—On the 24th of October I obtained a specimen of the red-throated diver at Lowestoft, an adult male, in the height of the autumnal moult, and showing very clearly that the red throat, with the lead-coloured margin to the red, is peculiar to the summer dress, and that the throat is white in winter after the occurrence of the autumnal moult, as I have before stated, (*Zool.* 2775). In the specimen in question the slate-coloured plumage on the cheeks, the chin, and the sides of the neck, and also the red plumage running down the front of the throat, was extensively varied by the pure white colour of the new feathers, which were coming among the old ones, and which were entirely white upon all the above-mentioned parts of the bird. On the back and wings, the old feathers were of a dull brownish gray colour, a little shaded, but not spotted: while the new feathers which were coming up among them were of a blackish gray colour, with a distinct white oblong spot on each side of the top of the feather.—*J. H. Gurney; Easton, Norfolk, November 7, 1851.*

Occurrence of Ray's Bream (Brama Raii, Cuv.) at Gamrie.—On the 24th instant, an example of this fish, measuring $22\frac{1}{2}$ inches in length, was caught in the harbour of Gardenston, in this parish. When first discovered, it was pushing its way inward against a receding tide, and was secured by one of the fishermen, who, by jumping into the water, succeeded in throwing it ashore with his hands. It contained a large roe. Dr. Parnell describes the teeth on the outer row as being "longer than those behind;" while Mr. Couch, in his description of this species, quoted by Mr. Yarrell (*British Fishes*, i. 119), says "the inner row of the lower jaw longest." In the present example the inner row of teeth on the lower jaw are the longer; but in the upper jaw the reverse is the case, the teeth in the outer row being much longer than those within. Those in the patch on the back palate equal the largest in size, and have a patch of smaller size placed behind the root of the tongue, and opposed to them. Mr. Couch describes the ventral fins "with a long pointed scale in the axilla," which is the case in the present instance; but the pectorals are also furnished with a corresponding appendage similarly situated, which, however, is broader and more rounded towards the point. He further says, "the nostril single," this I take to be double in the example before me, *i. e.*, there are two apertures on each side of the snout, which communicate, and are about two-eighths of an inch apart, the first being circular, the second rather longitudinal. I extracted from the pharynx two worms, about an inch and a half long; another from the larger intestines fully two inches long, but rather more slender in the body; and there was also found, embedded in the flesh of the fish, a ganglionic looking creature, three quarters of an inch in length, and of proportional thickness, having a pointed proboscis: these creatures I presume to be of the kind pointed out by Rudolphi as infesting the flesh and intestines of this fish. The worms taken from the throat were possessed of great vitality, and have a membranous border

or fin throughout nearly their whole length, attached to the back and belly. As an article of food the flesh of this fish is esteemed, and by those who partook of it in common with myself, it is considered, in point of flavour, to be intermediate between the sole and turbot. Some of our older fishermen inform me that another of this species was caught here about twenty-five years ago, having been left by the tide in a *pot* or hollow in the rocks at the back of the present key.—George Harris; Gamrie, Banffshire, October 29, 1851.

Land and Fresh-water Mollusca in the Neighbourhood of Norwich.

By W. K. BRIDGMAN, Esq.

SINCE the publication of my list in your number for March, 1850 (Zool. 2741), we have succeeded in making the following additions.

Limax carinatus. Catton and Thorpe. Plentiful on the stone banks late in the evening.

Helix aspersa, var. *alba*. Thorpe. Along the banks from the Rosary to the Asylum; about thirty specimens.

Helix aspersa, var. *reversa*. A fine specimen of this singular and odd-looking *lusus nature* was found by my eldest son a few weeks since in the above locality, and is now being fed upon *Convolvulus*-leaves, as the lip is not quite completed.

Achatina acicula. On a sunny bank near the Thorpe toll-bar. They are found, but rather sparingly, in the loose earth between the stones, and adhering to the roots of grass.

Planorbis imbricatus. About a table-spoonful of this shell was obtained last autumn by bringing home a handful of dead *Potamogeton*, found floating in a ditch, and washing it in warm water, when the animals, relinquishing their hold, fell to the bottom of the vessel, and were easily separated by straining the water away. *Segmentina lineata* I have procured in a similar way in equal abundance, by washing the weeds thrown out from the ditches about this time of the year.

Carocolla lapicida, as predicted, has been found alive in two widely distant localities, in great abundance. I first found several dead shells on a bank at Thorpe, in the spring of last year, and soon afterwards they were found alive in the adjoining hedges. This summer it was found by one of my sons, in great plenty, at Dunston, about three miles from Norwich; during a slight shower they were espied crawling on the grass, and along the lower branches of the whitethorn, by the road-side. This appears to be their favourite habitat, for in both instances they were found mostly at the bottom of the hedge and on

the stems, although in one spot there is a stone bank literally swarming with *Helix aspersa*, yet they were seldom found among the stones. The name being evidently a misnomer, is calculated to mislead as to their habits and place of resort.

I am glad to find the study of this interesting branch of Zoology becoming more general, and I hope, ere long, we shall have lists given for most of the principal counties in England. Our knowledge of the range and distribution of the species here is extremely defective, and the publication of these from *carefully worked* districts would be of infinite service; not a mere catalogue of such as protrude themselves to the notice of every stroller, or may even be found in the course of a morning's ramble, but the result of an attentive and diligent search in every probable spot within reach of one's residence. For many are only to be found at certain seasons of the year, and then only for a limited period, and this, too, often within a very circumscribed space, although at such times they may be taken in the greatest abundance. *Planorbis nitidus*, until quite lately, I had only found sparingly, adhering to aquatic plants; but on taking out masses of *Conservæ* to search for the smaller *Pisidia*, they were discovered to be literally teeming with this *Planorbis*, in company with *Valvata cristata*. This abundance, however, lasted only for about two or three weeks, when they seemed to have come to maturity, and rapidly disappeared; whether they migrated, or buried themselves in the mud, yet remaining to be discovered. I could mention many other similar cases; and the disappointment expressed by a correspondent who has lately visited a celebrated dredging locality without finding even a trace of the treasures it was said to contain, leads one to infer that a similar proceeding takes place among the marine Mollusca, and that a table of the "dates of appearance" may be even more of a desideratum than the knowledge of localities.

The collecting and study of the land and freshwater Mollusca affords by far the readiest and most convenient stepping-stone for any one desirous of becoming acquainted with the several branches of Natural History, and more especially for the younger class; because the haunts to be visited, and the means to be adopted for obtaining them, are quite in accordance with the habits and pursuits usually followed, not quite so enticing perhaps at first as birds'-nesting, but after a beginning had been fairly made, I have little doubt, judging from what I have witnessed in my own family, it would ultimately become equally fascinating. Besides the easy accessibility and general abundance of its specimens, some of which may be found during nine or ten months

of the year, the close attention required in their examination for detecting the species in all their varieties, tends materially to sharpen the powers of observation and discrimination, while the arraying and preserving the collection is calculated to foster a habit of neatness and order; and when such a collection has been once formed, it requires no unusual degree of care for its preservation. A nicely mounted collection on cards, or in card-board trays, may be made to occupy but a small space, and in addition to its being highly instructive and valuable, may be both portable and "pretty in appearance." Another advantage is that the series contains but a comparatively small number of species, nearly all of which are to be had, either directly, by finding them alive, or indirectly, by exchange.

For the latter purpose, and for gratuitous distribution, we have been in the habit of taking great quantities, and have been thus enabled not only to form a nearly complete series of this class, but also to obtain a large portion of the marine series as well. Several of those said to be plentiful in the vicinity of London, we have found the greatest difficulty in procuring, such as *Assiminea Grayana*, from the Greenwich marshes; *Clausilia biplicata*, from Kensington and Battersea marshes; and *Cyclas rivicola*, from the Thames, &c. We shall be very glad to open a communication with any of your correspondents who may be able to furnish us with them, or whose lists of desiderata contain any we may have to offer for their acceptance.

W. K. BRIDGMAN.

69, St. Giles's Street, Norwich,
September 20, 1851.

Remarkable Aberration in the Colouring of a Specimen of Cynthia Cardui. — The specimen from which the following brief description is drawn up, was taken by Mr. George Ingall, at St. Lawrence, in the Isle of Wight, on the 8th of September in the present year, and has been very obligingly placed by that gentleman in my hands for description. *Upper side: fore wings.* — In examples of *Cynthia Cardui* in its normal state, the entire apical area is of a deep brown colour, approaching to black, and adorned with certain white markings, the chief of which is a large oblong white blotch, situated at about two-thirds of the costal margin, to which its upper extremity is closely approximate; beyond this are four subrotund white spots disposed in an irregular series, the first and fourth being considerably larger than those which are intermediate, and again, beyond these, and still nearer the apex of the wing, is a sinuous series of five slender white lunules: in the aberrant example the large white mark, as well as the lunules, are entirely absent; the four subrotund spots are present, but altered in form, and having indistinct and suffused limits: the lowest of the four is increased to treble its normal dimensions, and united to an equally large and similarly shaped white

spot in the adjoining areolet, and again, in the next areolet, *i. e.*, the one still nearer the anal angle of the wing, is still another smaller round white spot: in normal specimens the fulvous discoidal area is blotched with very dark amorphous patches, in the aberrant example these are entirely absent, the discoidal area being uninterruptedly fulvous: in the normal state the black border of the anal portion of the external margin is of an intense dark brown, in the aberrant example it is much paler, and increased to double its usual width. *Upper side: hind wings.*—In normal examples of this species, there is an interrupted band of dark brown markings across the discoidal area; nearer the exterior margin is a series of five round black spots, one in each of the open areolets, with the exception of that nearest the anus; again, beyond this, is a series of six elongate black lunules, one in each open areolet: in the abnormal example, all these markings are absent, but nearly on the site of the five round black spots are five round pure white spots, of which that nearest the anal angle has an indistinct brown ocellus. The black marginal markings which, in the normal state, have been described as hastate, are in the aberrant example suffused and considerably altered in appearance. *Under side.*—This partakes in a great degree of all the remarkable aberrations noticeable on the upper side, but in addition the entire under surface has a washed or suffused appearance, all the distinctness or sharpness, so to speak, of the usual exquisitely beautiful marbled markings being obliterated.—*Edward Newman.*

Note on Leucania littoralis.—This species, once considered rare, has turned out one of our more common Leucanias. Last autumn I found the larvæ feeding on the star-grass, on the most exposed points of our sand-hills; they were then about half an inch long. I looked the same locality early in May, and found them nearly full grown. I took a great many, and by feeding them in the open air bred upwards of a hundred.—*C. Nelson, M.D.; Lytham.*

Notes on the Asteriadæ inhabiting the Moray Firth.

By the Rev. GEORGE HARRIS.

THE part of the coast referred to in the following Notes is indicated by the northern boundary-line of the parish of Gamrie, in Banffshire, which may be stated at about twelve miles.

Our most abundant star is the common cross-fish (*Uraster rubens*), which usually attains the size of ten or eleven inches. The other variety, with the leathery purple skin and short spines, is also very frequent upon our coast. I cannot however say that I have met with many examples of the variety characterized by the large development of the dorsal spines, so common in the Firth of Forth.

The Little Cross-fish (*Uraster hispida*), distinguished by its four short, broad, puffy-looking rays, is only now and then to be met with, and I have never seen a specimen possessed of very bright colours.

The Rosy Cribella (*Cribella rosea*), known by its hard, tubular arms, covered with triangular patches of spines arranged longitudinally, is by no means an uncommon species on this coast. On casu-

ally passing the harbour of Gardenston one morning last spring, I found not fewer than a dozen specimens dangling from a fisherman's line. Of these I secured the one half, which I have by me at present in a dried state. Some of them had lost arms, and show substitutes of tiny dimensions, a defect which I also observe in the reproduced leg of a spinous crab in my possession. The brittle part of this fish is just where the arm connects with the disk. Their general colour is a bright red, though many are of a dull orange. I observe by Forbes's 'British Star-fishes' (p. 108) that this species was added to the Scottish Fauna in 1839, and that only two British habitats are named, the one on the Irish coast, the other off Ayrshire. Allow me also to add that all my specimens exceed the size mentioned by the above authority, the largest being about one foot in diameter, and the smallest from eight to nine inches.

Purple Sun-star, (*Solaster endeca*). In Mr. Forbes's article on this species, under the heading "specific character," the rays are stated to be "nine to eleven," and the same is repeated in the text (p. 110). According to my observation the general number is nine, but I have met with examples, regularly formed, in which the number was eight, and in one case, I think I counted as many as thirteen.

The Common Sun-star, (*Solaster papposa*). We have many very gorgeous examples of this species; I must, however, make a remark similar to that just made respecting the last-named species. Mr. Forbes states the number of rays to be from twelve to fifteen (p. 112); I frequently find them with not more than ten. A very fine specimen before me measures almost a foot in diameter, which is nearly an inch larger than the largest mentioned by Mr. F., and I am satisfied that I have seen them considerably exceed that measurement. It is a sorrowful fact, that many, if not most, of the finer specimens of our native star-fishes never come under the eyes of competent observers at all, it being a regular habit with the fishermen taking up monstrous examples, to break them in pieces and cast them back again into the sea, in order that they "may never be plagued with them again." This doctrine I have been endeavouring to combat, and on obvious grounds; and by seeking to establish the conviction that the hitherto approved method of destruction, practised with a view to extermination, is the only certain one to aggravate the hated abundance a hundred-fold, have been trying to inculcate the propriety of landing all such volunteers safely on the beach. But since revolutions in human sentiment are not generally produced in a day, and as the fishers are a body proverbially attached to the sayings and doings of their

fathers, we dare not be too sanguine of immediate success. We shall be more than pleased, however, should a single future observer benefit in the smallest degree from our humble inculcation of sound doctrine touching a very interesting branch of natural science. Is it generally admitted, or rather known, that this fish has the power of giving out a considerable degree of caloric immediately when taken from the water? This is best made sensible by placing it at once on the back of the hand. This quality, if admitted, gives additional propriety to the name that has been attached to the species.

The Bird's-foot Sun-star, (*Palmipes membranaceus*). This, observes Mr. Forbes, at p. 118, "is generally accounted very rare;" and he gives the coast of Ayrshire as the only place in Scotland where it has been known to occur. It is by no means unfrequent upon this coast. During the past twelve months I have procured many examples, and a whole half-dozen at present glare upon me in the brick-red of their integuments, almost as freshly as when just taken from their native element. This colour is nearly uniform over the whole of the upper surface. Not one of these specimens shows anything approaching to white on their dorsal parts, which was the case in those examined by Mr. Forbes, (p. 117). Their size ranges from three and a half to nearly six inches.

The Knotty Cushion-star (*Goniaster equestris*) is rather more abundant than the preceding, and in general closely corresponds in its tints, though it loses them more readily in drying.

The But-thorn, (*Asterias aurantiaca*). This star-fish is plentiful in deep water having a sandy bottom. All my specimens are of average size, and show a deep ground of purplish pink.

The Ling-thorn, (*Luidia fragilissima*). We have both forms of this species, the five- as well as the seven-armed; the latter, however, is the more common. Their usual colour is a reddish yellow, and they vary in length from five to two and twenty inches. Though confessedly possessing a fragile corporation, I have not found the preparation of tolerable specimens so very impracticable as has sometimes been represented, and have best succeeded in preserving them entire, by allowing them to remain at rest under the ordinary influence of the atmosphere, until life becomes extinct, before interfering with them at all. Perhaps eight out of ten examples are then sufficiently firm to admit of the necessary scarifications and ablutions previous to being set aside to dry. I have one beside me at present, prepared in this manner, at my suggestion, by the kindness of Mr. James West, of Macduff; and though measuring twenty inches in breadth, the prepa-

ration has been completed with only the fracture of a single arm. Many of them are brought ashore in a sadly mutilated condition, but I have frequently seen more than the half deposited on the shore perfectly entire, or, as they had been caught, with shattered rays in course of reparation. As regards the method of extinguishing star-fish life by plunging in cold fresh water, the result of my experience is in favour of excepting most of the Ophiuræ, and in particular this frail star, from having any part in the hydropathic mode of treatment. Every time I have tried the experiment, the body has quickly thrown off into fragments; and in one instance, where I treated a whole colony, carried in safety over a distance of a mile and a half, to the douse, I had the mortification the next moment of beholding the whole converted into a chaos of hapless shreds. I retained the mingled mass upwards of twenty-four hours, and on turning it out was somewhat surprized to find many of the fragments giving unequivocal indications of vitality, which was done by violent movement of the suckers, the motion being chiefly lateral. This fish inhabits deep water, and on this coast is very often associated with the rosy Cribella.

Of the Echinidæ, besides the common egg-urchin (*Echinus sphæra*, Muller), the other varieties I have met with on this coast are the purple-tipped egg urchin (*E. miliaris*), hitherto not considered to be very abundant on the east coast of Scotland; and the purple heart-urchin (*Spatangus purpureus*, Muller), respecting which Forbes observes at p. 186, that it is rare in England and in Ireland; but, according to Fleming, is common in the Firth of Forth.

GEORGE HARRIS.

Mause of Gamrie, Banffshire,
September 10, 1851.

Proceedings of the Zoological Society.

Monthly General Meeting, November 6, 1851. — W. J. BRODERIP, Esq., V.P., in the chair.

F. I. Bladon, Esq., R. W. Crawford, Esq., and the Rev. B. Winthrop were elected Fellows. H. Druitt, Esq., W. H. Lintott, Esq., J. Colthurst, Esq., H. N. Reboul, Esq., and H. Bullock, Esq., were proposed as Candidates for the Fellowship.

The Report of the Council stated that the number of visitors to the Gardens during the month of October amounted to 45,535, and that the number of visitors in the current year, up to this time, as compared with the same period in 1850, presented an increase of 308,147. The Report further stated, that the Society had been honoured by the gift of a pair of wild boars, from H. R. H. the Duke of Saxe Coburg Gotha, which had been sent to this country under the care of one of H. R. H.'s foresters, and

arrived on the 9th of October. Several other donations have been received from various sources : and the purchases effected at the sale of the collection of the late President, included sixty-six species of the greatest beauty and rarity. Of these, but a small number have as yet been removed from Knowsley to the Menagerie in the Regent's Park, in consequence of the buildings which are in progress there being not yet entirely complete.

The Scientific Meetings will be resumed on Tuesday evening next, when, among other communications, Professor Owen will read a paper "On the Relative Capacity of the Cranium in the Negro, Chimpanzee, and Orang-utan."—*D. W. M.*

Proceedings of the Entomological Society.

November 3, 1851.—*J. O. WESTWOOD, Esq., President, in the chair.*

The following donations were announced, and thanks ordered to be given to the donors :—'The Annual Report of the Leeds Philosophical and Literary Society,' 1849-50; by the Society. 'Jahresbericht des Naturwissenschaftlichen Vereines in Halle,' two parts, 1849-50 and 1850; by the Society. 'Bibliotheca Historico-Naturalis et Physico-Chemica,' Erster Jahrgang, 1s Heft; Halle, 1851; by *E. A. Zuc-kold*, Foreign Member of the Society. The 'Athenæum' for October; by the Editor. The 'Zoologist' for November; by the Editor. A second box of Renfrewshire insects; by *Mr. Young*, of Paisley. A case of Tasmanian insects (from the Great Exhibition); by *F. Cox, Esq.*, Van Diemen's Land. A glass case containing a piece of honeycomb, in which a queen bee had been reared from the worker-brood, (from the Great Exhibition); by *Mr. Golding*.

The following books had been obtained for the Society :—'Orthoptera descripta et depicta a *T. de Charpentier*.' Lipsiæ, 1845; and 'Libellulina Europæ descriptæ ac depictæ a *T. de Charpentier*.' Lipsiæ, 1840.

Mr. John Hunter, of 24, Bloomsbury Street, London, was balloted for and elected a Member of the Society.

The President, in exhibiting the honeycomb presented by *Mr. Golding*, read the following memorandum from that gentleman's note-book :—"July 2nd. Hive No. 5 having lost its queen, gave it a piece of brood-comb from another hive. On the 8th found a sealed royal cell upon it. On the 15th, the young queen was come forth. On the 28th found eggs and young larvæ in the hive; consequently the operation was completely successful. The queen thus raised is now queen of the hive." *Mr. Golding* adds that "this might be taken as a specimen of the facilities offered by hives having movable leaves or bars."

Mr. Stevens exhibited a new British coleopterous insect—*Dircæa discolor*; and one of the rare British Tineidæ—*Gracillaria Phasianipennella*; both taken this year in Scotland, by *Mr. Weaver*. *Mr. Stevens* also exhibited specimens of *Helops pallidus*, *Curtis*, found at Tenby by the *Rev. H. Burnie*.

Mr. Edwin Shepherd exhibited some beautiful specimens of *Aporophila australis*, and one example of the pale variety of *Colias Edusa*; all captured this autumn near Deal.

Mr. Smith exhibited some oak-leaves, with galls, commonly known as "oak-span-gles," attached. In one of these he had found a larva, probably that of *Cynips longipennis*, an insect hitherto obtained only in the perfect state.

Mr. Wilkinson exhibited larva-cases of a *Talæporia* (T. Ferchaultella, *Stephens* ? Zool. App. cix.), found in July, from which females had been produced, which laid fertile eggs without male intercourse. The larvæ that had been hatched were also in the box.

Mr. White exhibited some specimens of Crustacea, including *Idotea Baffini*, *Acanthonotus hystrix*, *Amphithoë Edwardsi*, *Nymphon* (new species), &c., collected by Charles Ede, Esq, Assistant-Surgeon to H. M. S. Assistance, lately returned from the Arctic regions. He exhibited some drawings by Mr. Ede, of minute Crustacea, especially of a species of *Cyclopsina*, which Dr. Baird thinks may prove to be the type of a new genus. He exhibited an unpublished plate of Crustacea and Insects, which will shortly appear in Mr. MacGillivray's 'Voyage of H. M. S. Rattlesnake.' He also exhibited a portrait of Jules-César Savigny, Member of the Academy of Sciences, and one of the *savans* employed during the French expedition to Egypt and Syria; and gave a short account of his valuable labours and published works.

Mr. Spence submitted a letter, addressed to him by Mr. T. Thompson, of Hull, inquiring the name of an insect, the larvæ of which were doing considerable damage to the corks in wine-bottles in the cellar of a wine-merchant in that town; and also what means could be adopted to stay their ravages. A specimen of the eaten corks was also sent, but the larvæ had escaped.

Mr. J. F. Stephens said that on a former occasion some perforated corks were forwarded to the Society, from which he had reared *Gracillaria Vau-flava*, *Haw.*, and the larvæ certainly fed on the cork; so that it was probable the damage in the present instance was caused by that species.

Mr. Bedell observed that the moth was frequent in vaults in the London Docks and other places. Other members concurred in the opinion that the larvæ were imported in the cork, and that the only cure for the damage they caused was to recork the bottles.

Mr. Douglas exhibited specimens of a moth, a species of *Ephestia*, which appeared to be undescribed, and which he proposed to call *E. Ficella*, from its having been reared (by Mr. Doubleday) from larvæ which fed on dried Turkey figs. The specimens exhibited were lately found in the bonded warehouse at Botolph Wharf, where great quantities of figs were deposited.

Mr. Douglas also exhibited specimens of *Gelechia costella*, reared from larvæ found on *Solanum Dulcamara*, on which they feed variously; some mining the leaves, some fastening two or more leaves together and feeding between them, some eating the seeds, and others boring into the stems. He observed that the larvæ of another species of *Gelechia*—*G. contigua*, *Haw.* (*tricolorella*, *Haw.?* *St.*), closely allied to *G. costella*, fed on the young shoots and leaves of *Stellaria holostea*, and the larvæ of another species, *G. blandella*, fed in the capsules of the same plant. These discoveries, all made by Mr. Stainton, were not only interesting in themselves, but showed that in some instances, much stress could not be put upon the manner of feeding of larvæ, as a guide to generic association, for there could be no doubt of the close relationship of these three species, notwithstanding the habits of their larvæ were so different.

Mr. Ingpen exhibited, mounted as objects for the microscope, young *Coccidæ* found on leaves of maple: they probably belonged to the genus *Cyanops*.

Mr. W. W. Saunders mentioned that an instance had lately come under his notice, in which some ornaments formed of macaroni, and worked into fancy baskets, had been totally destroyed by *Anobium paniceum*.

Mr. Saunders also stated, that over a large extent of garden-ground on the south side of London, French beans had been freely attacked by a red-brown *Acarus*, causing the formation of yellowish spots on the leaves, and killing the plants in about ten days. On looking at some plants that had been cast aside for a few days, he found them covered with a fine delicate web.

The President exhibited a specimen of the rare beetle, *Leptinus testaceus*, taken some years since at Box Hill, by Mr. Janson; and stated that at a future time he should have some observations to offer on this and other species of blind insects.

The following note by Mr. Weaver was read:—

"In 1850 I discovered, in Scotland, an empty larva-case of a species of *Psychidæ*, differing from any I had seen before, and having this year found some of the same kind with living larvæ in them, from which I have reared the perfect insect, I am satisfied it is a new species. The male very closely resembles *Sterrhopterix opacella*, which I formerly discovered in Hampshire; but the female is very dissimilar, as I propose to show by comparison: and, for the sake of brevity, I will call *S. opacella* No. 1, and the new species No. 2.

"*The Cases*.—No. 1 is found on dry ground, and is thickly covered with sprigs of heath, on which plant the larva feeds. No. 2 is found on boggy ground, is much larger than No. 1, has on it no sprigs of heath, and therefore I think the larva does not feed on heath.

"*The Larvæ*.—No. 1 has the back of a tortoiseshell colour, and the under side of a light colour; in fact it resembles the larva of *S. nigricans*, but is smaller. No. 2 has the back nearly black, and the under side black as far as the third pair of legs.

"*The Perfect Insects*.—No. 1. The female has no breast, is quite destitute of legs, and the body is much shorter than in No. 2. It has eight or ten distinct tufts of hair? all round each segment of its body; this hair is very brittle, and as, when the insect falls out of its case it rolls about, the tufts soon get broken. No. 2. The female has a breast, six slender legs (which may easily be overlooked), and two antennæ; it has a black mark down the under side of the breast as far as the legs; head and thorax shining black, the head protruded. On each side of the body are three patches of hair or down, also one patch on the fore part and one on the hinder part of the back, all of which are so short that they can scarcely be seen without a glass. When the insect drops out of its case, it does not roll about like No. 1, but remains quiet. In conclusion, I would remark that any entomologist seeing the two females alive, would at once say they were different species."

The President observed that the males of these species, under the above circumstances observed in the females, might be expected to show a difference in the number of the joints of the antennæ and in the neururation of the wings.

The President exhibited a living larva of *Hamaticherus Heros*, received from Sir T. Pasley, the head of Pembroke Dock-yard, where this insect is often found to be very destructive to the Italian oak timber, into which it burrows to a considerable depth. Living specimens of the perfect insect had been exhibited by the President on previous occasions, received from the same gentleman, who had informed him that the larvæ are frequently found when the timber is being cut up at the saw-pits. The son of the Timber Inspector of Pembroke Dock-yard had also obtained eggs of this beetle, which were hatching at the end of October. The President remarked that this larva, from its size, afforded the means of solving the difficulty which had arisen respecting the construction of the anterior portion of the body of this and other longicorn larvæ; the

large membranous segment succeeding the head having been considered by some authors as a portion of the head itself.* It is true, indeed, that this large segment is destitute of spiracles, and that the first pair of legs seems placed rather on the fold between it and the following segment; that, moreover, the first pair of spiracles is placed in the following segment, and, as it is the general principle of larvæ to have the first pair of spiracles either in the first, or in the fold between the first and second segments, it might at first sight seem to warrant the conclusion that the large membranous segment following the head is really part of the head. But when the corneous head itself is separately examined, it presents all the characters of a perfect head, and it is seen, moreover, that the second pair of legs is certainly attached to the segment which bears the first pair of spiracles, we shall be compelled to consider the first segment as reduced to the small inferior fold which bears the first pair of legs. Taking all these circumstances into consideration, the President was clearly of opinion that the large segment in question is not part of the head, but is the real first segment greatly developed; and that the position of the first pair of spiracles on the second segment of the body is anomalous.—*J. W. D.*

Proceedings of the Microscopical Society of London.

October 22, 1851.—A paper "On the Sporangia of some of the Filamentous Fresh-water Algæ," was read by Mr. George Shadbolt.

This was in continuation of a subject introduced to the notice of the Society in May last, by the same gentleman, when he pointed out the fact that in *Zygnema quadratum* and *Z. varians*, the sporangia undergo a considerable change of form, assuming a stellate character after the lapse of some weeks from their first transformation. The second paper detailed observations confirming those previously announced, and giving some of the particulars of the *modus operandi*, and added *Lyngbya floccosa*, and a species of *Vesiculifera* to the list of those in which the author had noticed an analogous transformation.

It was stated that in *Zygnema varians*, after conjugation, when the sporangium appears as an ellipsoidal homogeneous mass, the first change which takes place is the formation of a few semi-transparent vesicles, just within the sporangium, and these continually increase in number until the whole of the interior becomes similarly converted. After the interval of about a fortnight from this period, a further change occurs, the sporangia being covered with long projecting spines, producing a considerable inflation of the original cell-wall of the frond in which they were formed, a fact which the author considers important, as tending to prove the continued existence of vitality in the cell at this stage.

It was stated that in *Lyngbya floccosa* the spines are exceedingly short, but what is remarkable, they are disposed in a regular spiral line about the long axis of the sporangium.

In *Vesiculifera* ———? the spines are numerous and extraordinarily delicate.

In all the above-named species, the observations were made while the sporangia were still within the original frond, so that there is no doubt as to which each belonged.—*J. W.*

* See various papers in the 'Annales de la Société Entomologique de France.'

APPENDIX

TO

THE ZOOLOGIST

FOR 1851.

ART. XVIII.—*Descriptions of some New Species of British Hymenoptera.* By
FREDERICK SMITH, Esq., Assistant in the Zoological Department of the
British Museum.

Family—CHRYSIDIDÆ.

Genus—CHRYISIS, *Linnaeus*.

CHRYISIS ORNATUS.

Male: length $4\frac{1}{4}$ lines. Head golden green, violet-blue at the vertex; antennæ nigro-piceous, the scape golden-green: thorax above rich crimson, intermixed with gold on the prothorax, and on the sides of the mesothorax; a square patch on the disk golden green; the post-scutellum and metathorax are also green; the thorax beneath is blue, dashed with green; the legs blue, the tibia above having a golden refulgence, the apical joints of the tarsi piceous: the first and second segment of the abdomen is of a rich carmine; the basal half of the third segment is blue, the apical half golden green; beneath metallic blue dashed with green: the head and thorax are closely and rather coarsely punctured, but the abdomen very closely and delicately so: the apex of the abdomen is not toothed.

A single specimen in my own collection.

This very beautiful species, which I believe to be undescribed, was captured by W. Hewitson, Esq., in the vicinity of Bristol, who kindly presented it to me. This insect might without examination be mistaken for a large variety of bidentata; it is, however very distinct from that species, the sculpture at once separates it, the abdomen being as finely punctured as in *C. neglecta*, and the margin of the third segment is entire as in that species; but independently of the colour of the third segment of the abdomen, the prothorax is proportionably one-third longer than that of *C. neglecta*. It is a valuable addition to our native Fauna.

Family—CRABRONIDÆ.

Genus—CERATOPHORUS, *Shk.*

CERATOPHORUS ANTHRACINUS.

Female: $3\frac{1}{2}$ lines. Black, head subquadrate, not narrowing towards the thorax, punctured rather deeply and distantly, thinly pubescent; in the centre of the face just above the insertion of the antennæ an obtuse tubercle, pear-shaped; its base being the narrowest end; the clypeus bidentate: the labrum triangular, prominent, smooth and shining, and grooved down the centre; the mandibles bidentate: the thorax shining and pubescent, with scattered punctures on the disk, the metathorax rugose, excepting a broad, half-circular, shining space, which encloses a subcordiform one: the wings fusco-hyaline, the nervures black: the abdomen very smooth and shining, pubescent towards the apex; the apical segment coarsely punctured and deeply grooved down the centre.

A single specimen in my own collection.

The species of this genus, as well as those belonging to the genera *Diodontus* and *Passalæcus*, are extremely difficult to determine, but the excellent descriptions of Mr. Shuckard, in his 'Essay on the Fossorial Hymenoptera,' have in a great measure removed the difficulties, still they require very careful examination. The present species, which was captured by Mr. S. Stevens, in Devonshire, I have hesitated in describing until I could satisfy myself of its distinctness from *C. morio*: the above description will, I trust, enable the student to recognize its specific differences; which, independently of its large size, preclude, I think, the possibility of its being a variety of *morio*. The species of this genus are rare.

Genus—CRABRO, *Fab.*

CRABRO INTERSTINCTUS.

Male: length 3 lines. Black, head subquadrate, minutely and closely punctured, the stemmata placed in a triangle on the vertex; a smooth, impressed line running from the anterior stemma to the deep canaliculation of the face, the clypeus carinated in the centre, and covered with silvery pile; the scape of the antennæ yellow towards the apex, the third and fourth joints beneath deeply emarginate, and produced into a tooth at their apex; the thorax closely covered with minute, elongate punctures; the metathorax rugose, and having seven or eight short, elevated lines, running down from the post-scutellum, and also a longitudinal incisure, the posterior portion is transversely striated: the wings hyaline, their nervures and tegulæ piceous; the anterior tibia in front, the posterior pair above, and the anterior and intermediate tarsi yellow: the second, third, fourth and fifth segments of the abdomen have on each side an ovate, yellow spot, and the basal margin of the sixth is yellow.

In my own collection.

This insect is extremely distinct from any hitherto described British species of the genus: it was captured by W. Hewitson, Esq., at Weybridge, and I am indebted to his liberality for its possession. This season, he informs me, he again observed the species in the same locality, but had not at the time the means of capturing it.

Family—APIDÆ.

Genus—NOMADA, Scop.

NOMADA MISTURA.

Male: length $3\frac{1}{4}$ lines. Black, the mandibles ferruginous, with a spot at their base, and the margin of the clypeus yellow; the labrum has a minute tooth in the centre; the antennæ ferruginous beneath, and the three or four apical segments entirely so; the scape black: the thorax has a spot on each side of the collar, and the tubercles yellow; the apex of the femora, the tibia, and tarsi yellow-ferruginous; the anterior and intermediate tibiæ have a black stain above; the posterior pair black, excepting their base and apex: the tegulæ and nervures of the wings piceous, the apical margins fuscous: the abdomen has the margin of the basal segment rufopiceous, and a band of the same colour across the other segments; the second and third segments have on each side an oblong, yellow macula, acute within: a very minute spot on the sides of the third, and the margins of the fifth and sixth yellow; beneath, the margins of the segments are rufopiceous; and the third and fourth have on each side a narrow, yellow line, curving upwards towards the centre, and terminating in a round spot.

In my own collection.

The only described species, with which I am acquainted, that appears to resemble ours is the *N. melanostoma* of Herrich-Schäffer, but his description is too recondite to be satisfactory; it agrees, however, with *mistura* in having a black scape, scutellum, clypeus and labrum; but he does not mention the tooth with which the labrum is armed. This insect was captured by W. Hewitson, Esq., at Weybridge, and kindly presented by him to my collection.

FREDERICK SMITH.

ART. XIX.—*Description of a New British Species of the Genus Actinia.*

By WILLIAM THOMPSON, Esq.

Natural Order—POLYPES CHARNUS, Cuvier.

Genus—ACTINIA, Linneus.

ACTINIA CLAVATA.

Body subcylindrical, a quarter of an inch in diameter; tentacula placed in two series, one being much longer than the other, club-shaped, larger at the top than the bottom, and ending abruptly; twenty-five longitudinal raised lines are placed at regular intervals round the body, the top of each produced into a wart at the edge of the disk, giving the margin a scalloped appearance; the length of the longest tentacula about half the diameter of the disk, the shorter ones a third of the length of the longer ones; all the tentacula are retractile: skin warty: ground-colour straw, or yellowish pink, profusely covered with innumerable small, puce-coloured specks, which become scarcer towards the apex, and where they form five or six circles; the

raised longitudinal lines are much less pinky and well defined in consequence of a yellow colour, the spots upon them are much larger and scarcer than on the other parts of the body. The shorter tentacula are of an uniform, dirty, transparent white; the longer the same, but having, in addition, blotches of pink and puce: in the interior of each are visible, small, oval, cream-coloured bodies: oral disk pellucid, with the appearance of chalk having been sprinkled over it. I have satisfied myself by examination that this is not the young of any of our described species. The description is very particular, but I thought, claiming it as new, I could not be too much so.

HAB.—I found this *Actinia* attached to the rocks under Sandsfoot Castle, in Weymouth Bay, at extreme low-water mark, spring tides.

WILLIAM THOMPSON.

Weymouth, February 19, 1851.

ART. XX.—*Descriptions of New Insects from New Holland.*

By EDWARD NEWMAN.

Family—CERAMBYCIDÆ.

Genus—PEMPSAMACRA, *Newman*.

PEMPSAMACRA PYGMÆA.

Supra aheneo-fusca, subtus argenteo-albida; antennarum articulo 5to, elytri utriusque maculâ subrotundâ submedianâ flavescentibus. (Corp. long. .3 unc. Elytrorum lat. max. .09 unc.)

The prevalent and very uniform colour of the upper surface of this little longicorn is a brassy brown, that of the under surface a silvery but not brilliant white; in the antennæ, the fifth joint, the comparatively great length of which has been employed as a distinguishing character of the genus, is yellow except at the apex, which together with the remainder of the antenna is brassy brown; on each elytron, at half its length and near its costal margin is a nearly round yellowish spot.

HAB.—A single specimen taken at Wonboyn River, near Cape Howe on the east coast of Australia, was taken by Mr. Mossman, and consigned to Mr. S. Stevens.

CERAMBYX PULLUS.

Niger, concolor, lanugine brevissimâ pallidiori undique obsita: prothoracis tuberes 5: 1 utrinque laterali, 3 dorsalibus in triangulo dispositis. (Corp. long. .75 unc. Elytrorum lat. max. .2 unc.)

Black and perfectly concolorous, except that a very short, paler down clothes the upper surface of the insect, while the lower surface is glabrous and almost naked: the antennæ are 11-jointed, rather slender, and not half the length of the body; the prothorax is short, scarcely longer than the head; about the middle of each side it has a strong tubercle, and dorsally it has three tubercles arranged in a triangle, two

of these constituting the base of the triangle are parallel with the anterior margin of the prothorax, and are prominent and polished; the third, constituting its apex, is nearer the scutellum and is almost obsolete. The legs are rather short and small, and the thighs are slightly incrassated.

HAB.—New Zealand: in the possession of Mr. S. Stevens; consigned to that gentleman by Mr. Mossman. It is related to *Aromia* and *Rosalia*, but totally destitute of the beauty which the species of those genera possess.

Genus—OMOTES, Newman.

OMOTES PUNCTISSIMA.

Testacea, oculis tantum nigris, puncta, pilis testaceis obsita, parum depressa; elytra profundè ac confertim puncta. (Corp. long. .25 unc. Elytrorum lat. max. .045 unc.)

Entirely testaceous, the eyes alone being black, beset with testaceous hairs, all parts punctured, but the elytra deeply and confluent so. Seeing how extraordinary is the variation in size between individual Australian longicorns of the same species, I was at first sight strongly inclined to consider this diminutive insect as nothing more than a small, dark-coloured specimen of *Omotes Cucujides*, a single example of which was captured by Mr. Higgins, and described by myself, some ten years back, in the 'Entomologist;' however, on carefully comparing the two specimens, I was induced to abandon this view, since other characters far more important than those of magnitude or colour were revealed, and seem clearly to indicate that the insect now under consideration is specifically distinct: in *O. Cucujides* the prothorax is slightly depressed dorsally, and slightly, almost imperceptibly, rounded laterally; in *punctissima* it is perfectly cylindrical dorsally, without depression, laterally quite straight, and also longer in proportion to its width: in *O. Cucujides* the elytra are decidedly flattened dorsally, highly polished and glittering; in *punctissima* they are scarcely depressed, and so completely covered with deep and confluent punctures, that there is no glittering appearance whatever: the legs, short in both species, are proportionately shorter in *punctissima*.

HAB.—South Australia: in the cabinet of Mr. Westwood; to whose kindness I am indebted for the loan of this interesting little species.

Family—LAMIIDÆ.

Genus—RHYTIPHORA, Serville.

RHYTIPHORA DONOVANI.

Fusca; antennæ piceo-fuscae, nigro fimbriatæ, articulis basi cinereo-lanuginosis: caput et prothorax fusca, hic fasciis illud maculis fulvo-lanuginosis ornata; scutellum fuscum; elytra fusca, tuberculis prominulis basi, maculis fulvo-lanuginosis undiquè, vittâ latâ costali ante humerum interruptâ niveâ, ornata. (Corp. long. .65 unc. Elytrorum lat. max. .225 unc.)

This insect in size and general appearance resembles *Saperda nigro-virens* of Donovan, but the absence of all green colour in the elytra, and the interruption of the

white costal vitta, are sufficient to distinguish it immediately: I will, however, add a more detailed description. Antennæ pitchy-brown, the basal joint glabrous and naked, all the rest fringed on one side with black hairs; the basal portion of each joint is also clothed with short gray down: head brown, but nearly covered in patches with a short fulvous down: an impressed, epicranial, glabrous line is prolonged anteriorly almost to the clypeus: prothorax brown with impressed rings, which are filled with short fulvous down, thus appearing as fulvous rings, but these are attenuated and almost interrupted on the back: elytra brown, with numerous, slightly raised black tubercles near the base, numerous fulvous downy markings all over the sutural and dorsal regions, a slender, gray, sutural vitta extending from the middle to the apex, and a costal white vitta extending from near the shoulder to the apex; beneath the humeral angle, which is prominent and highly glabrous, is a white downy spot, connected with the costal vitta by an extremely attenuated marginal line: beneath, the body is covered with short down; that on the sides of the mesosternum is pure white; that on the abdominal segments is gray, sprinkled with small, round, glabrous spots, the margins of each segment being fulvous: legs short, stout, and variegated with downy markings of gray and fulvous.

HAB.—New Holland: I have seen many specimens of this insect; that described is in the possession of Mr. S. Stevens, consigned to that gentleman by Mr. Wilson.

Genus—ACANTHOCINUS, *Megerle*.

ACANTHOCINUS LINEOLA.

Niger, punctus, maculis minutis lanuginosis irroratus; prothoracis lineolâ laterali longitudinali albâ. (Corp. long. .55 unc. Elytrorum lat. max. .225 unc.)

Antennæ black, fringed beneath with black hairs: prothorax black, with a slender, longitudinal, white line on each side above the lateral spine: elytra deeply punctured, indistinctly ribbed: beneath clothed with whitish down.

HAB.—Kangaroo Island: in my own collection.

This form in *Lamia* is very numerous in individuals if not in species, throughout New Holland: the present species somewhat resembles the annulicornis of Latreille, described under the name of *Acanthocinus marginicol*, by Boisduval, 'Faune de l'Océanie,' p. 490, but from this very common species it differs in wanting the beautiful annulations of the antennæ, and in having the broad, gray, lateral vitta of the prothorax replaced by a slender white line.

ACANTHOCINUS? PLUMULA.

Antennæ corpore paullo longiores, basi sat proximæ, 10-articulatæ, articulo secundo sesquialtero, quinto apice plumoso, nigra, maculis elytrorum nonnullis, incertis, lanuginosis, canis. (Corp. long. .475 unc. Elytrorum lat. max. .2 unc.)

Antennæ rather longer than the body, somewhat approximate at the base, the head being longitudinally grooved between them, 10-jointed; the first joint long and stout, the second less than half the length of the first, rather stout and apparently divided into two, but whether this division is apparent only or real, is a point on which, with-

out attempting a separation, an observer is so liable to be mistaken, that I will not venture to express an opinion; the third is long, slender, and slightly arcuate; the fourth shorter; the fifth still shorter and bearing a small fascicle of black hairs on one side at its apex; the rest decrease in length; all the joints have a thin fringe of hairs on one side, they are black, with the exception of a small portion at the base of each which is gray: the head and prothorax are black, with scattered gray hairs, the latter has a strong and sharp central tooth on each side, and three small obtuse tubercles on the base, the middle one of which is nearest the hind margin and unites with a small ridge which passes between the other two: the elytra are manifestly wider than the prothorax, and ample, extending beyond the abdomen; they are rounded at the apex, coarsely and deeply punctured, black, and variegated with irregular markings, due to a short, velvety, gray pilosity, they have two short ridges at the base, one originating at the humeral angle, and the other half way between that and the scutellum: the legs are moderate, the femora being decidedly, but not abruptly, incrassated.

HAB.—Van Diemen's Land: a single specimen in the cabinet of Mr. Westwood, to whom I am indebted for the opportunity of describing the species.

The occasional numerical reduction of the joints of the antennæ of certain Lamiidæ has already been noticed, but whether this peculiarity is incident to one sex only I am unable to say, never having seen a series of any species, the antennæ of which were uniformly 10-jointed. The well-known Brazilian species, *Lamia scopifera*, described by Germar, in 1824, in the first volume of his *Ins. Nov. Spec.*, p. 476, which was raised into the rank of a genus by Audinet-Serville in the 'Annales de la Société Entomologique de France,' iv. 79, has the antennæ 11-jointed in the male and only 10-jointed in the female, and it is by no means impossible that the numerical reduction in the instance before us applies only to one sex.

Genus—ISOSCELES, Newman.

ISOSCELES FIGRA.

Piceo-nigra, puncta, pilis lanugineque canis obsita, elytra fusca profundè ac confertim puncta, prothoracis latera vittâ vix distinctâ cano-lanuginosâ ornata. (Corp. long. .3 unc. Elytrorum lat. max. .05 unc.

Face rather convex, its direction more than prone, antennæ moderately distant seated on prominences more than half as long as the body, 11-jointed, slender, the basal joint rather stout; the second as usual short and small; the remainder longer, but gradually decreasing in length and substance; the longer ones individually slightly arcuate: prothorax nearly cylindrical, scarcely so wide as the head, its lateral margins perfectly straight: elytra linear, rather wider than the prothorax, longer than the abdomen, obliquely and arcuately truncate, the angles of the truncature rather acute: legs uniformly short, mesotibiæ with the distinctive Lamiate notch. The colour is pitchy-black, the elytra approaching to brown, all parts are punctured, the elytra deeply and confluent: every part is also sprinkled more or less abundantly with gray hairs or down, the latter forms a line on each side of the prothorax: this pilosity is somewhat silvery on the tibiæ: the extremity is furnished with a pencil of longer black hairs.

HAB.—South Australia. The only specimen I have seen is in the cabinet of Mr. Westwood, to whom I am indebted for the opportunity of describing the species.

Natural Order.—CLERITES.

Genus—CLERUS? *Auctorum*.

CLERUS? SOCIALIS.

Punctissimus, subpilosus, niger, maculis 8 pilorum niveorum ornatis, scutello quoque niveo. (Corp. long. .4 unc. Elytrorum lat. max. .15 unc.)

Black: prothorax remarkably convex, covered with large, deep, and confluent punctures; a little patch of snowy-white hairs on each side of its anterior margin, almost close to the eye: scutellum covered with white down; elytra at the base nearly twice as broad as the prothorax, but gradually narrowing towards the apex; the basal portion, rather exceeding half, is covered with deep confluent punctures arranged in series, and there is an elevated prominent ridge between the humeral and scutellar angles; the apical portion of the elytra has shallow and distant punctures, and is highly polished; this smoother portion is divided from the more rugose, by four little subfascicular patches of snowy-white hair; two of these are very near the suture, and two below them nearer the costa; in the anal angle of each elytra is a similar but smaller patch: a remarkably obese insect, closely resembling, except in colour, *Clerus crassus* of Newman.

HAB.—Adelaide, South Australia: taken by Mr. Wilson, and now in Mr. S. Stevens' collection.

Class—NEUROPTERA.

Natural Order—PERLITES.

Genus—NEMOURA, *Latreille*.

NEMOURA SPEUSTICA.

Nigra; alis anticis obscuris, maculis numerosis fuscis ornatis; pedes nigri, femoribus basi flavis, tibiis prope basin flavo annulatis. (Corp. long. .4 unc. Alarum dilat. 1.4 unc.)

Black: eyes very prominent, but still the breadth of the head is inferior to that of the prothorax, black with a scarcely perceptible testaceous mark near its anterior margin: mesothorax black, with a triangular scutellum-like mark near its anterior margin; the rest of the body is black: the fore wings are uniformly stained with pale brown, and adorned with a great number of distinct brown spots of various size and figure: hind wings slightly spotted at the apex, tinged with yellow at the base: femora yellow at the base; tibiæ annulated with yellow rather before the base.

HAB.—Australia: taken by Mr. Mossman, and now in Mr. S. Stevens' collection.

EDWARD NEWMAN.

ART. XXI. — On the Characters and Affinities of *Dohrnia*, an Australian Genus of Hormocerous Coleoptera. By EDWARD NEWMAN.

Class—COLEOPTERA.

Stirps—HORMOCERA, Newman.

Natural Order—STENELYTRA, Latreille.

Family—ÆDEMERIDÆ, Leach.

Genus—DOHRNIA.

Caput subexsertum, subpronum, facie subelongatâ; antennæ corpore vix breviores, basi distantes, tuberibus prominulis sitæ, 11-articulatæ; articulo 1mo longo, paullò curvato, extus crassiori; 2do 3tioque simplicibus, brevioribus, cylindraceis, gracilibus; 4to iterùm breviori, simplici; 5to præcedenti longitudine pari, difformi; 6to breviori, iterùm difformi, complanato, uno latere dilatato; 7mo 5to longitudine pari, difformi, horizontalitèr excavato, profundè concavo, poculiforme, margine elevato; 8vo minori, breviori, tamen complanato, dilatato; 9no 10moque valdè brevioribus, subpyriformibus, ultimo 2 præcedentibus longitudine æquanti, simplici, cylindraceo, basi apiceque acuto. Oculi subrotundi, laterales, valdè distantes, prominentes. Labrum magnum, ferè quadratum, margini antico medio emarginatum, angulis obtusis; mandibulæ arcuatæ, apice bifidæ, margine antico tumidæ, coriaceæ, paullò ciliatæ: maxillæ galeatæ, maxipalpi majores 4-articulati, articulo basali minuto; 2do triplò longiori, extus crassiori; 3tio præcedenti longiori, paullò crassiori, ultimo 2do longitudine æquanti, dilatato, subtrigono, margine antico obliquè truncato, angulis obtusis; galea articulata, paullò geniculata, articulo apicali longiori, apice incurvo, pilis curvatis obsita; lacinia minori obtusa, pilis curvatis obsita: labium margine antico subrotundum, medio depressum; ligula biloba, lobis rotundatis; labipalpi breviores, minores, 4-articulati, articulis 1—3 brevibus, crassis, 4to longiori, apice tumido, subrotundato, apice obliquè truncato. Prothorax capite paullò angustior; latitudine paullò longior, posticè angustior, subobcordatus. Scutellum minutum, apice rotundatum. Elytra longa, linearia, flexilia, dehiscentia, prothorace latiora. Pedes mediocres, simplices, heteromeri. Abdominis segmenta 5 tantùm patentia, ultimo fisso, fissura lobos binos, magnos, sexuales, rotundatos, fimbriatos amplectitur.

DOHRNIA MIRANDA.

Caput nigrum, facie palpisque ferrugineis; antennæ nigrae, articulis 3tio 4toque piceis, 7mo disco albo, 8vo extus albido; prothorax rufus; elytra nigricantia; propedes ferruginei, profemorum linea dorsali nigra; mesopedes nigri, mesotibiæ basi ferrugineæ; metapedes nigri; abdomen nigricans, fulgore metallico splendens. (Corp. long. .35 unc. Elytrorum lat. max. .075 unc.)

Head : — the face rather long and somewhat prone: the antennæ nearly of the same length as the body, geniculated, the 2nd joint united with the 1st at a right angle, and the remainder nearly following the direction of the second; moderately dis-

tant at the base, seated on small but distinct protuberances, and 11-jointed: the eyes are large, round, lateral, distant, prominent and black; the entire epicranial region, including the tubercles on which the antennæ are placed, is black, punctured and shining; the face below the antennæ is ferruginous, the same colour also pervading the mouth and its appendages, the labium excepted, which is black and highly glabrous; the antennæ require a more minute description, and I cannot avoid expressing the fear which I entertain of being unable to convey in words a correct idea of their anomalous structure: the 1st joint is long, slender at the base, stouter towards the apex, porrected directly in front of the head, and somewhat curved inwardly, so that the extreme point of the curvature approaches and nearly meets the corresponding point of the 1st joint of the other antenna, this joint is entirely black and shining; the 2nd and 3rd are severally half the length of the 1st, simple, straight, and subcylindrical or deviating only from a cylindrical form in being slightly incrassated externally; they are of two colours, black and pitchy red, longitudinally divided; the 4th has the same general character, and the same distribution of colour, but is shorter and stouter; the 5th is of nearly equal length with the 4th, but flattened out on one side into a large rounded lobe; it is black, with the exception of a small ferruginous portion at the base; the 6th is not more than half the length of the 5th, but is flattened and dilated in the same way, as far as its length will permit, it is entirely black; the 7th is rather longer than the 5th, dilated and hollowed into a kind of basin, the bowl whereof is white and the rim black, this joint has much the appearance of a mounted lens; the 8th is not more than half the length of the 7th, it has a small dilated and flattened portion, which is white, while the shaft is black; but the dilated portion in this is very inferior to that in either of the three preceding joints; the 9th and 10th are short, obconical and pitchy; the 11th is longer, pitchy, and somewhat sausage-shaped.

Mouth: — the labrum is rather large, nearly square, but having the anterior margin rounded at the angles and depressed or notched in the middle: mandibles arcuate, hooked and bifid at the apex, the two points being similar, closely approximated and acute; the inner margin of the mandible is increased, and its concavity filled, by a tumid, slightly ciliated, coriaceous or semimembranaceous lobe: maxillæ having the three constituent terminal portions distinct and separate; the maxillipalpi are large and 4-jointed, the basal joint very minute, the 2nd three times the length of the 1st, and thickened apically, the 3rd shorter and more robust than the 2nd, the 4th fully equal in length to the 2nd, dilated, somewhat but very indistinctly triangular, the apical margin obliquely truncate and slightly rounded; galea very much shorter than the palpus, jointed and elbowed near the base, the apical portion somewhat linear, much longer than the basal portion, the apex incurved and thinly beset with incurved hairs: labium with the anterior margin rounded, but depressed in the middle; ligula divided by a median notch into two large spreading rounded lobes fringed with cilia; labipalpi shorter and smaller than the maxillipalpi, 4-jointed, the 1st, 2nd, and 3rd joints short and robust, the 4th longer, stouter towards the apex, where it is obliquely rotundato-truncate.

Prothorax rather narrower than the head, rather longer than broad, indistinctly obcordate, being evidently swollen towards the anterior and narrowed towards the posterior margin; its dorsal surface is somewhat uneven, its colour bright ferruginous and shining.

Elytra rather broader than the prothorax, long, narrow, severally rounded at the apex, slightly deliscent, extremely thin, flexible, nearly black, covered sparingly with

short hairs, deeply and confluent punctured and almost destitute of gloss : wings ample, smoke-coloured, not entirely concealed by the elytra.

Legs of moderate size and simple form : *procoxæ* large, approximate, black with a small ferruginous spot at the apex ; *profemora* slightly excurved at the apex, ferruginous, with a black blotch on the outer side at the base, prolonged into a black line along the upper edge to the extreme apex : *protibiæ* slightly excurved at the base and again at the apex, ferruginous, with a black line on the upper edge of the apical half ; *protarsi* distinctly 5-jointed, the basal joint short, the 2nd and 3rd still shorter, the 4th deeply notched, bilobed and cushioned beneath ; the four closely crowded together ; the 5th simple, rather exceeding the lobes of the 4th in length ; the claws rather large, simple ; the entire *tarsus* ferruginous, the joints just tipped with pitchy black and the claws of the same colour ; *mesocoxæ* of moderate size, closely approximate at the base, black ; *mesofemora* somewhat flattened, excurved, dilated beneath into a rounded præapical tuber, like an almost obsolete tooth, black ; *mesotibiæ* simple, black, ferruginous at the base, distinctly 5-jointed and perfectly black ; the detail of the joints as in the *protarsi* : *metatibiæ* longer than the *pro-* and *mesotibiæ*, excurved, furnished with 2 apical spines ; *metatarsi* distinctly 4-jointed, the basal joint long, simple, and produced into a spine at the extremity, the 2nd short, elongato-triangular, the 3rd flattened, dilated, cushioned beneath, the 4th simple, springing from the upper surface of the 3rd ; the *metapedes* are black, with a faint indication of pitchy red at the joints.

Abdomen beneath black, with a metallic green lustre, five segments only are visible ; these are punctured, and clothed with scattered hairs, yet shining ; four of them are entire, the 5th or apical segment is deeply notched, and divided into two rounded dehiscent lobes, and from the notch issue two longer, larger, rounded lobes, apparently connected with sexual function ; these are fringed along the exterior margin with pale hairs, which in their uniform curvature and extreme regularity resemble eye-lashes.

HAB. — Hobart Town, Van Diemen's Land, where it was taken by Dr. John Co-verdale, and obligingly communicated to me by Mr. H. Colquhoun, of Glasgow.

Named *Dohrnia*, in honour of Herr Dohrn, the President of the Stettin Entomological Society, and intended to commemorate that gentleman's visit to this country, which will long be remembered with pleasure by those who had the good fortune to enjoy his company.

The affinities of this very remarkable-looking insect do not appear difficult to ascertain. The distinctly heteromerous tarsi decide that its station must be among the *Hormocera* ; its flexible and somewhat dehiscent elytra induce one to regard it as one of the *Stenelytra* ; while the structure of the head, mouth, prothorax and tarsi, fully bears out this location, because in these parts it closely resembles the well-known *Ædemera cærulea*, an insect which serves as a kind of type for Dr. Leach's family *Ædemeridæ*, and this appears to be typical in the higher group at present called *Stenelytra*. I should however remark that considerable discrepancy exists in the structure of these parts, between species which, in other respects, seem perfectly cognate ; for instance, between *Ædemera cærulea* and *Asclera viridissima*. Our insect combines the oral apparatus of the former* with the habit of the latter, more nearly how-

* Mr. Curtis, under the name of *Ædemera sanguinicollis* (Brit. Ent. pl. 390), appears to me to have drawn his details of the oral apparatus, as well as the inflated metafemur, from *Ædemera cærulea*, while the entire insect represents a true *Asclera*,

ever approaching *Asclera sanguinicollis*, and still more nearly *Asclera mansueta*, a widely distributed New Holland species which is familiar to all collectors.* A character of very trivial importance, and one that might reasonably be looked for in any group of Coleoptera, adds some additional weight to this view of the case. In the genus *Asclera*, the species frequently have several joints of the antennæ near the base longitudinally divided as regards colour; the entomologist need only examine the very familiar *sanguinicollis*, *Fabr.*, *sanguinicollis*, *Curt.*, and *mansueta*, *h. o.*; and this is precisely the case with these joints in the insects before us, which retain something like a normal and simple structure.

But although I place this insect without hesitation among the *Stenelytra*, and in the more restricted group *Ædemeridæ*, I must not be considered as expressing any opinion as to the integrity of these groups: thus, the character of the elytra is of very doubtful value; not that a character derived from the elytra is necessarily worthless; on the contrary, in some groups, as the *Staphylinites* for example, it is excellent: but that in the *Stenelytra* it is intrinsically vague, and its application essentially arbitrary. Again, in the minor group, associated under the name *Ædemeridæ*, there is an equal departure from the character proposed as distinguishing—the inflated metafemora; this singular character being restricted to a very small number of the species originally and still included in it, and to one sex only, the other species and sex being rather remarkable for simple and slender metafemora. The genus *Nothus*, again, appears to me to be widely discrepant, its oral apparatus being entirely different, and the Rhyncophoromorphous genera *Mycterus* and *Salpingus* have no further apparent connexion with the group, than the very comprehensive character of heteromerous tarsi. Again, the singular insect, *Cephaloon Lepturides*, found in the United States by my lamented friend, Edward Doubleday, and described by me in the fifth volume of the 'Entomological Magazine,' is equally abnormal; as also is the extraordinary *Calopus serraticornis* of Fabricius. I will not, however, venture on the assertion that

but I think perhaps not the *sanguinicollis* of Fabricius, since that species is without the singularly disposed fuscous markings which, in Mr. Curtis's beautiful figure, adorn the prothorax. I venture the suggestion that this author has made this combination of characters, seeing he advisedly combines *Ædemera* and *Asclera*, as well as *Dryops*, under one generic name, and therefore probably concluded that it was a matter of indifference which insect he selected for purposes of anatomical detail. I hope it will not be considered presumptuous if I add that in such instances it would have been well to name the species dissected, as well as that figured entire, or still better, to have drawn the details from the identical species figured entire.

* *ASCLERA MANSUETA.*

Caput in prothorace receptum; epicranium et oculi nigra; facies latè ferruginea; labrum et palpi nigra; antennæ corpore breviores, 11-articulatæ, simplices, articulus 1us 2usque seminigri, semiferruginei, colores longitudinalitèr divisi, cæteri nigri; elytra et abdomen nigra, elytra confertim puncta, haud striata, apice acuta; prothorax obcordatus, latè ferrugineus, maculis 4 nigris, 2 minoribus anticis distantibus, 2 majoribus posticis subapproximatis; coxæ ferrugineæ; femora ferruginea, apicibus fuscis; tibiæ et tarsi fusca. (Corp. long. .375 unc. lat. .1 unc.)

HAB.—Australia. In the cabinet of the British Museum.

the group *Stenelytra*, approved as it has been by philosophically-inductive minds, and adopted by industrious and careful compilers, is essentially so heterogeneous in its composition as to be unworthy of adoption : such an assertion would not only be excessively presumptuous on my part, but also premature, since my acquaintance with the group is very imperfect, and I have never considered it with sufficient deliberation and care to warrant me in proposing any alteration.

EDWARD NEWMAN.

ART. XXII.—*Characters of a Second Species of Pseudocephalus, a Longicorn Insect from New Holland.* By EDWARD NEWMAN.

Natural Order—CERAMBYCITES.

Family—(——— ?)

Genus—PSEUDOCEPHALUS, *Newman*.

The genus *Pseudocephalus* was established in the 22nd No. of the 'Entomologist' (Entom. 353), in a descriptive list of longicorns collected at Port Philip, by Mr. E. T. Higgins : one species only is described, *P. formicides*, remarkable for the extreme similarity of its enormously developed head and curiously geniculated antennæ, to some of the ant tribe ; and I have now the pleasure of adding a second. I will not venture an opinion as to the natural place of these insects among the longicorn Coleoptera, but merely observe that in their completely exserted head, round eyes, and greatly restricted prothorax, they resemble the *Lepturidæ*.

PSEUDOCEPHALUS ARIETINUS.

Nigricans, antennis, femoribus basi, tibiis, tarsisque latè testaceis : elytra Arietis signo retrorsum spectanti albido ornata. (Corp. long. .25 unc. Elytrorum lat. max. .065 unc.)

Head dull black, minutely punctured, longitudinally depressed between the eyes ; antennæ and mouth bright testaceous : prothorax dull black, minutely punctured, longer than the head, greatly restricted anteriorly, and there much narrower than the head in the middle, produced on each side into a strong tooth, and behind this again restricted : scutellum black : elytra much broader than the base of the prothorax, square at the humeral angles, depressed dorsally, rounded at the apex and completely covering the abdomen, the costal margins slightly incurved, so that they are narrower across the centre than either at the base or below the centre, dull black, minutely and confluent punctured, the minute size and close proximity of the punctures giving the elytra a silky appearance, this appearance is probably enhanced by the presence of a close, very short, velvety pile ; on each elytron is a median transverse narrow yellow-white fascia, which originates in the costal margin, and after proceeding some distance in a nearly direct line towards the suture, curves gradually upwards and finally unites

on the suture with the corresponding fascia of the other elytron: placing the insect with its head towards you, these fasciæ represent very accurately the zodiacal sign of Aries, a figure which will at once remind the entomologist of one of the markings as well as the name of Clytus Arietis: legs long, with tumid femora, the tumid portion being dark brown, while all other parts of the legs are testaceous:

HAB.—Van Diemen's Land. Two specimens taken by Dr. Coverdale, near Hobart Town, are in the collection of Mr. Colquhoun, of Glasgow, to whose kindness I am indebted for the opportunity of making the species known.

EDWARD NEWMAN.

ART. XXIII.—*Note on the Genus Ametalla, with Characters of three Species supposed to be previously undescribed.* By EDWARD NEWMAN.

Stirps—MACROCERA.

Natural Order—CRIO CERITES.

Genus—AMETALLA, Hope.

The genus *Ametalla* was first characterised in 1840, by the Rev. F. W. Hope, in the 3rd part of his 'Coleopterist's Manual,' at p. 179; is placed by that author in Dr. Leach's family Sagridæ; and is said to "unite in itself the genera *Donacia* and *Sagra*." The type of the genus is said to be *Donacia* Spinolæ of Hope, and it seems probable that this is a misprint, and that *Ametalla* Spinolæ, the only described species, is intended. Immediately following the description of *Ametalla* Spinolæ is that of another new genus and species, *Mecynodera picta*, which the author also considers as a link uniting the above-mentioned genera. Lacordaire has added a second species of *Ametalla*, under the name of *A. Stenodera*, but this appears to possess the only distinguishing character of *Mecynodera*; and both genera seem to be abundant in species and individuals, and to be restricted in geographical range to New Holland, or at least to the Australian group of Islands. The generic distinction between *Ametalla* and *Mecynodera* is not very apparent, the instrumenta cibaria, described in both instances at considerable length, seem very similar. I subjoin the characters of three species, which have been obligingly handed me by Mr. S. Stevens for that purpose, and which at present stand unnamed in most cabinets.

With regard to the true value of the group of Coleoptera, first, I think, separated by Dr. Leach (1824), under the name of Cricoceridæ, secondly by Latreille (1825), under the name of Cricocerides, and subsequently by myself (1833), under that of Cricocerites, some difference of opinion will obtain. Latreille combines them with his tribe Sagrides (Fam. Nat. 403) into a family, Eupoda, and, although he places this family exactly intermediate between his Longicornes and Cyclica, expressly calls attention to their great affinity to the former. "Par les tarses," says he, "les mâchoires, et la languette, ces insectes ne diffèrent point ou presque pas des longicornes; mais leur corps, quoique oblong, est plus court." Other affinities might be shown by a comparison of the structure, food, and economy of the larvæ. Dejean, in his 'Catalogue des Coléoptères,' a work which (although worse than useless in its mass of MSS. names, never likely to be received as the representatives of things, yet) is a first and noble attempt

to reduce into something like order our *rudis indigestaque moles* of species of Coleoptera, places, without hesitation, the Criocerites among the Chrysomelines (see p. 383). I shall be glad of the assistance of entomologists on this subject, and repeat, merely as suggestive, the opinion I have already expressed elsewhere, that all the affinities of the group in question are with the Cerambycites, more especially with the Lepturidæ.

AMETALLA XANTHURA.

Nigra, nitida, elytrorum humeris plus minusve rufis, apicibus flavis; metafemora subtus tubere mediano denteque valido acuto præapicali armata. (Corp. long. .5 unc. Elytrorum lat. max. .2 unc.)

Antennæ fusco-testaceous, scarcely longer than the prothorax, of uniform thickness, 11-jointed, the 2nd joint short, the 3rd rather longer, and each succeeding joint slightly longer, the last acuminate: eyes prominent, almost round, rather small, very distant: mandibles strong, arcuate, sharp-pointed and furnished with an internal lobe; labipalpi with a short basal and two longer joints, the middle joint cylindrical, the terminal one ovate; maxipalpi with a short basal and three longer joints, the 2nd and 3rd cylindrical, the 4th ovate: head not narrowed behind the eyes, black, punctured, shining: prothorax rather broader than the head, somewhat obcordate, its greatest diameter being near its anterior margin, black, punctured, shining: elytra ample, much broader than the prothorax, having a deep sulcus on each very near the suture, punctured, the punctures arranged in about 12 irregular linear series, black, with a coral-red humeral spot, various in size and figure, and a large yellowish apical patch, from which a yellow line, more or less distinct, extends both along the sutural and costal margins: legs of moderate size; metafemora slightly incrassated, furnished beneath with a slight central lobe and a strong acute præapical tooth; tarsi 5-jointed, the 1st and 5th joints longest and of equal length, the basal joint notched at its apex, the 2nd more deeply divided, the 3rd short, very deeply divided and bi-lobed, the lobes long and externally very hirsute, the 4th joint short, cylindrical, shining, and without hairs, and the 5th curved, slender, shining, the claws strong, simple.

HAB.—Australia. Two specimens, collected by Mr. Wilson, have been consigned to Mr. S. Stevens.

AMETALLA UBER.

Nigra, nitida, elytrorum testaceorum suturâ strigisque octo nigris, metafemora subtus tubere mediano denteque valido acuto præapicali armata. (Corp. long. .45 unc. Elytrorum lat. max. .15 unc.)

Antennæ fusco-testaceous, as long as the body, of uniform thickness, 11-jointed, the 2nd joint very short, the 3rd scarcely longer, the others gradually increase in length, the last acuminate: eyes very prominent, almost round, rather large, very distant: head black, closely and almost confluent punctured: prothorax rather broader than the head, somewhat obcordate, its greatest diameter being near its anterior margin, black, punctured, shining: elytra ample at the base, quite twice as broad as the base of the prothorax, each having a sulcus near the suture, and a number of deep punctures arranged in 8 irregular linear series, bright testaceous, with the suture and 10 linear spots black, these black spots or marks are however very inconstant in size, figure, and even occasionally in number, in the specimen before me, two of these long

black markings originate side by side at the base of the elytron, their length is rather less than a third that of the elytron, and that nearest the black sutural line unites therewith at the base; rather below the middle of each elytron are two others, whereof that nearest the suture is broadest and extends the lowest, a 5th on each elytron occupies the costal angle: the legs are brownish black; the metafemora are slightly incrassated and furnished with a slight central tubercle and a strong acute præapical tooth; tarsi as in *A. chrysura*.

HAB.—Australia. One of the most abundant and most widely diffused of Australian Coleoptera, but I am unable to find a prior description. Mr. S. Stevens has received it from Mr. Wilson, and I received it from numerous and distant localities, during my Curatorship of the Entomological Club.

AMETALLA DECOLOR.

Testacea, nitida, prothorace capite antennisque saturationibus elytris pallidioribus; metafemora nullo modo armata. (Corp. long. .35 unc. Elytrorum lat. max. .125 unc.)

Antennæ dull testaceous, of nearly the same length as the body, of uniform thickness, 11-jointed, the 2nd joint the shortest, the 3rd and following gradually increasing in length, the last terminating in an extremely acute point: eyes prominent, round, distant, black: head fusco-testaceous, closely and confluent punctured: prothorax rather broader than the head, its greatest diameter near the middle, narrowed before and behind, fusco-testaceous, punctured, slightly downy, with a glabrous median longitudinal posterior line: scutellum extremely small, rounded: elytra ample at the base, much broader than the prothorax, each elytron has a distinct longitudinal sulcus parallel with and closely approximate to the suture.

HAB.—Australia. Same locality and collection as the two preceding.

EDWARD NEWMAN.

ART. XXIV.—*On the Word Hermaphrodite, as employed in Zoology; considered especially with regard to a Bee accidentally possessing some of the distinguishing Characters of both Sexes.* By EDWARD NEWMAN.

I THINK I was the first to suggest that time and trouble might be saved by confining one term to one organ or one phenomenon; this was twenty years ago; and although my suggestion has been cleverly opposed, and occasionally ridiculed with considerable acrimony, yet I am not altogether disposed to abandon it, although I have seen it convenient occasionally to yield to custom, as, for example, in the instance of *elytron*, universally substituted for what I regard as the older, more precise, and more meaning term, *wing*. The word *hermaphrodite* is one of those which has always appeared to require this restriction, being currently used to express four distinct phenomena, which it is the object of this paper to define and discriminate: but prior to this it may perhaps be as well to glance at the meaning and origin of the word, in fact, its history, previously to its employment in physical science.

In Hederich's *Lexicon* the word *Hermaphroditos* is thus explained:—"Filius Veneris et Mercurii: semimas; ambigui sexus; androgynus." This is indeed giving a tolerably wide margin, yet not wider than that which naturalists are still willing to allow. The first or mythological interpretation seems to be unquestioned,* but the application does not appear to me very clearly traceable to the parentage of our hero: simply regarded as the son of Mercury and Venus, it does not seem extraordinary that he should have received his euphonious cognomen; his history, however, clearly explains the application of that cognomen in matters of science: it is on this wise. Like Cephalus, Actæon, and other heroes reflected in Ovid from the more brilliant lights of Greece, *Hermaphroditus* was a mighty hunter. He pursued the sport in many lands, and one day, having missed his quarry after a most exciting and laborious chase, he came to a lonely lake of the purest and most delicious water: he threw himself down on the bank, and having taken a refreshing draught, fell asleep under an umbrageous canopy of boughs. As he lay, "beautiful exceedingly," locked in the arms of sleep, the nymph *Salmacis* beheld him, and instantaneously conceived for him that absorbing passion which decided the fate of both for ever. He awoke, and beheld the nymph bending over him: she avowed her passion; but he, possibly mindful of some *Dulcinea* at home, possibly bound by some plighted troth, turned a deaf ear to her endearments, and refused to yield to her seductive entreaties. In this situation of masculine firmness and virtue, sculptors and painters have fixed the group, and rendered it immortal:† but this is not our business. *Salmacis* secured our hero ere he could escape, pressed him with one arm to her bosom, and lifting the other towards heaven, devoutly prayed that their bodies henceforth might be united in one. Her prayer was heard. The two bodies became one body. A statue now extant at Rome exhibits the extraordinary conformation required to render the fable complete; but a moment's reflection will, I think, supply another and more natural solution.

Some of the poets have taken another view of this matter, and seem to consider Venus as a god of both sexes; and there are not a few instances in which Venus is spoken of as a male and as *Hermaphroditos*. All the school editions of Virgil have a note appended to the word *Deo*, in the line—

"Descendo, ac ducente Deo flammam inter et hostes,"—*Æn.* ii. 632,

* Except by Bell. After having penned these few sentences, it occurred to me to turn to the word *Hermaphroditus* in Bell's *Pantheon*, a copy of which extraordinary publication has descended to me as a heir-loom. The opening passage I will recite. "*Hermaphroditus* the son of *Hermes* and *Aphrodite*, i. e., of *Mars* (!) and *Venus*." This curious parenthetical explanation, however, does not originate with the conceited compiler of the '*New Pantheon*;' it is an unacknowledged piracy: but a compiler who copies so gross a blunder is not trustworthy on any point.

† The reader of the classics cannot but be struck with the great analogy between *Salmacis* trying to detain *Hermaphroditos*, Venus dissuading *Adonis* from the chase, and the amatory designs of *Potiphar's* wife on *Joseph*. Painters and sculptors have preserved what may be called a family likeness in their illustrations of the three subjects: the lady in nearly all instances is seated, and holding the flowing robes of the gentleman, whose virtuous soul seems horrified at the idea of the solicited endearments, and whose anxiety to escape is depicted in every feature and every limb.

to this effect: — “*Dea Venere; nam Deus communi genere aliquando sumitur:*” and Lucan, i. 2, 80; Euripides, *Troad.* v. 948; and Demosthenes, *Orat. de Coronâ*, are cited in support: the last of these certainly appears to make the gods bisexual. The annotator might have added Hesychius, who calls Venus *Aphroditos*; and Theophrastus, who asserts that *Hermaphroditos* is Venus, and that her statue in the Isle of Cyprus had a beard like a man. Hence it is tolerably clear that *Hermaphroditos* was a myth, intended to represent the passion of love, and to indicate that such passion was common to both sexes. Compare also Calvus and Heyne, *passim*.

In the other meaning given in Hederich, it will be observed a great discrepancy exists: “half-male,” “of doubtful sex,” and “androgynous,” or having both sexes complete. It remains to be seen how far these terms are capable of restricted application.

The great John Hunter divided hermaphrodites into two kinds, “the natural and the unnatural, uncommon, or monstrous.” “The natural,” says that eminent anatomist, “belongs to the inferior and more simple order of animals, of which there are a much greater number than of the more perfect: but as animals become more complicated, have more parts, and each part is confined to its particular use, a separation of the two necessary powers for generation has also taken place in them.”*

It may be assumed that this division was Hunter’s ultimatum on the subject, and it seems to have been received as satisfactory, since it has uniformly been adopted by compilers, although allusions to the name of Hunter are rarely met with, and his admirable paper still more rarely quoted. Let us consider the question of its sufficiency.

In the first place we are told of hermaphrodites in the vertebrate province of the animal kingdom: these are beings which, being female, present certain abnormal or not truly female appearances. I believe anatomists are perfectly agreed that the sexual parts in the higher animals are essentially the same in both sexes, but differently modified; there is then nothing extraordinary in the occurrence of instances wherein this difference of modification is incomplete: such incompleteness occurs not uncommonly in the ox tribe, more rarely in the sheep tribe, and still more rarely in the horse tribe. It is not desirable to pursue this branch of the subject, and it will be sufficient to say, that imperfect females are barren, not possessing even the natural attributes of a single sex, the only name by which they are known is that of free martins. It is by no means improbable that barrenness in all instances is a consequence of this tendency, although it may be the only mode in which the peculiarity is exhibited. This class of phenomena might be called *PSEUDOGYNOUS*: that is, falsely or imperfectly female.

In the second place, we are constantly told of hermaphrodites in the insect province of the animal kingdom; and this class of phenomena is as curious as it is decidedly abnormal. One half of the individual is male, and the other half female, the division by a longitudinal mesial line of separation being very manifest: the antennæ in many insects present a marked contrast in the two sexes, and it is very striking in such instances to find each character of antennæ issuing from the same head. Phenomena of this class are clearly comprehended in the term *semimas*, but I doubt whether this would be so expressive as *HEMIGYNOUS*, or half-female, which moreover harmonizes better with the preceding.

In the third place, we have hermaphrodites in abundance in the group which were

* ‘Philosophical Transactions,’ lxi. 281.

formerly emphatically designated worms or Vermes, and the phenomenon is equally exhibited in the mollusk and annelide divisions of the province: the garden snail (*Helix aspersa*) may be quoted as an example of the former; the common earth-worm (*Lumbricus terrestris*) as an example of the latter. In these the organs of both sexes are perfectly developed, each individual is at the same time a perfect male and a perfect female, yet strange to say, it appears to have no power to fecundate itself, a *coitus* with another individual being required for that purpose, and both individuals being made fruitful by the double union. Phenomena of this class may be characterized as ANDROGYNOUS, or perfectly male and female.

We now arrive at the fourth and lowest province of animals, those of radiate structure: among these, as a rule, there is no difference of sex; like a flower with stamens and pistils, each individual is complete in itself, the sexual parts being interwoven as it were with each other: hence, like the flower, it reproduces its kind. Oken says of the individuals among vertebrates, that two of opposite sexes are required to make a perfect being; but among the radiates, on the contrary, each individual is perfect, each, unaided and alone, is capable of all the functions nature requires for the preservation of its kind. Here then we have the fable carried out: here we have the two bodies blended into one: here we have the true hermaphrodite, a creature fulfilling all the conditions of the myth: to this the term HERMAPHRODITE is strictly applicable, and, as I conceive, to this it should be rigidly restricted.

The following formula will express these phenomena.

Normal condition.		Monstrous and exceptional condition.	Provinces.
Individuals ...	{ Hermaphrodite		RADIATA.
	{ Androgynous		VERMES.
	{ Monogenous	{ Hemigynous.	INSECTA.
		{ Pseudogynous.	VERTEBRATA.

It is thus, I hope, shown that the idea attached to the term hermaphrodite is not precise; and moreover, that Hunter's division of hermaphrodites into natural and unnatural, is not sufficient, since each of these divisions comprises two classes of phenomena perfectly distinct.*

EDWARD NEWMAN.

ART. XXV. — *Affinities of the Pulicites, an Essay.*

By EDWARD NEWMAN.

“Fleas are not lobsters, — — — !” — *Peter Pindar.*

“La puce est un Diptère sans ailes.” — *Strauss Durckheim.*

Preliminary Note.

THE mist of obscurity which for so long a period veiled the affinities of Stylops, has also extended to those of the flea: but there is

* Since the above was written, I find that the hemigynous insects require a more careful examination than I had found leisure to bestow on them, and it will not be desirable to delay the publication of these preliminary observations until the examination shall be more complete.

this difference ; that in the case of Stylops, the obscurity appears due to an error of description, and to an almost total ignorance of its economy, in the flea to the extremely abnormal characters of the imago. From the most remote antiquity the flea has been a puzzle and a problem to our ablest naturalists. Still I cannot but regard with infinite pleasure the fact, that the deliberative entomologists of the last thirty years have indicated the truth, although in no instance has the problem been worked out. Lamarck expressly invites attention to the identity of metamorphosis between the flea and certain of the Diptera ; Oken considered the flea dipterous ; Haliday, in a letter to Mr. Curtis, published in 'British Entomology,' indicates his having arrived at a similar conclusion. "In investigating," says he, "the analogy between Cordyla and Mycetophila nigra on the one hand and Pulex on the other, I was led to the discovery of the antennæ of the latter genus ;" in this passage the affinities of the flea are clearly indicated. Burmeister again considered the flea a dipterous insect ; and Strauss Durckheim, an author unhappily unknown in this country, except through the admirable abstract by my late friend, Edward Doubleday, and my own numerous citations in the first volume of the 'Entomological Magazine,' expressly asserts that the flea is nothing more than a dipterous insect without wings ; Erichson, Schiodte and Siebold have all expressed the same opinion. Under these circumstances my position is widely different from that which I occupied in the investigation of Stylops : then, I stood alone ; * here, I am surrounded by a cloud of witnesses, the very *principes* of the science.

It is not extraordinary that the characters of the perfect flea should have misled our earlier systematists, for it may be observed that when a law of nature is clearly pointed out, as in the instance of the varied characters of insects' wings, it is almost certain to be received with too abject a servility ; and hence the exceptions which are sure to exist are not sufficiently taken into consideration : still I am at a loss to conceive on what ground two of our most respectable methodisers have adopted their view of its affinities. I allude to Latreille and Leach ; the former of whom places the flea between Pediculus and Cicindela, the latter between Coccus and Papilio. These seem grave errors of judgment ; but an error of fact equally grave, first broached by the younger MacLeay, was subsequently repeated and insisted on by M. Dugés, and, in spite of its most transparent fallacy, has obtained currency among recent compilers : I allude to the supposed presence of

* See Supplementary Note.

wings, which have been created out of the scales observed and figured by Hooke, on the sides of the thoracic segments. Now, supposing that wings were to be detected on an insect previously regarded as apterous, the comparative anatomist is at once furnished with a clew to its position in one of those systems which all entomologists have admitted as the basis of their methods: but alas! this favourite hypothesis must fall before the searching investigation of the comparative anatomist; these scales are neither wings nor the representatives of wings. This assertion I base upon the following facts:—*first*, no wings have the character of these scales: *secondly*, no wings have the position of these scales: *thirdly*, true wings, in a closely allied genus, exist in company with these scales. These preliminary remarks appeared necessary, in order to bring the book-history of the flea up to the period of the commencement of my inquiry; and I wish it to be distinctly understood that I disclaim all idea of originality in my conclusion that the flea is a dipterous insect; my object being rather to prove that those profound entomologists are correct who have supposed this to be the case.

§ 1. *Economy and Metamorphosis of the Flea.*

It seems scarcely necessary to state that the flea is a lively little insect of a red-brown colour, remarkable for its power of leaping, and for its disagreeable propensity to suck our blood; but a few facts connected with its history are not so universally known, and are worth recapitulating. The bite of the flea is much more annoying to some persons than to others; in fact, it may be assumed from the everyday use of the term, “a mere flea-bite,” that the majority of mankind regard its attacks with great contempt. It is not thus with all: were I to indulge in a little bit of autobiography, my own pulicine experiences would excite some surprise: I will, however, only describe the feeling and appearance produced. The feeling is that of intense and intolerable itching, accompanied with burning heat and a greatly accelerated pulse; the surface is swollen around the puncture in a distinct and well-defined circular space, as large as a shilling, and becomes white, the skin exterior to this circle is red, and the puncture itself intensely red; these effects last for twenty-five minutes. The female flea is commonly, perhaps always, the aggressor. I have acquired some considerable skill in capturing fleas while in the act of sucking my blood, and they have invariably proved females. There are several species, almost equally common, but not yet distinguished by specific characters; *Pulex irritans* I regard as an absolute myth.

The female is more than double the size of the male, and frequently attacks her prey while the act of coition is still in progress, and, if disturbed, leaping with her customary agility, totally unimpeded by the male, who retains his position with admirable dexterity and *sang froid*. The female usually lays eight or ten eggs: these are very large in proportion to the size of the insect, perfectly white and oval, much resembling a pigeon's egg in miniature. I have often watched the act of oviposition: it may constantly be observed in hot weather, when a dog infested by fleas is lying asleep; the fleas then come to the extremity of the hairs, and drop their eggs slowly and at intervals, but quite at random. The eggs appear to me to be perfectly without any viscid covering, and hence do not adhere to the hairs, but generally, after passing amongst them, fall to the ground; but this is not the experience of prior observers. Thus, Baker* says that fleas "deposit their eggs at the roots of the hairs of cats, dogs, and other animals, sticking them fast thereto by a kind of glutinous moisture." The same statement has been made by older writers, and therefore I am led to believe that a difference of economy may obtain among the species; I am able to speak positively only as to a species which infests the dog, and this, as before stated, I have carefully observed in the act of oviposition. This suggestion of the existence of a discrepancy in the character of the egg in different species, is rendered probable by the fact that very excellent observers have described a difference in the character of the larva. Thus DeGeer found those which he examined to be without eyes; while Roesel found that they possessed those organs very conspicuously. DeGeer states that the segments of the body are pilose, and Baker, that they are thinly covered with long hairs; whereas most authors have either described them as perfectly naked, or left that fact to be inferred. I have never seen the larvæ alive, but in one mounted as a microscopic object, I found that each segment emitted a few very minute hairs at right angles with the mesial line. Roesel himself points out a third discrepancy which came under his own notice: some of the larvæ which he procured assumed the pupa state without any covering, while others, as we shall find to be the normal economy, spun delicate silken cocoons, and in them became pupæ.

The larvæ are long, apod, vermiform maggots, composed of thirteen very distinct segments, all of them nearly equal in breadth, but the first or head rather longer than the others, and somewhat attenuated

* Microscope, i. 193.

anteriorly, where it is furnished with two very distinct but short and apparently exarticulate antennæ: the thirteenth segment, or telum, has two short appendages, which have been described as hooks; but if we state them to be slightly curved, I think it is all that can be said. These larvæ, although perfectly without legs, are extremely vigorous in their movements: and here it must again be mentioned that observers are at variance. Baker, following several earlier writers, says that "if touched, or under any fear, they roll themselves up on a sudden in a round figure, and continue motionless for some time; after which they slowly open themselves and crawl away as caterpillars do, with a lively and swift motion." Other authors do not mention this, but describe them as twisting their bodies, when disturbed, into a variety of shapes, and altogether omit all allusion to their power of crawling, which indeed seems greatly to require verification, because, although apod vermiform maggots are not destitute of the power of locomotion, yet they rarely have need of that of crawling or locomotion, being originally located amongst their food, which they never leave, but therein undergo both ecdysis and metamorphosis. I extremely regret that a hiatus occurs as to the food of the larvæ of the flea, but this perhaps is not so important, considering it is an obscurity extending to the larvæ of thousands of familiar insects, even to that of the common house-fly.* A very intelligent and most careful observer, states in the '*Encyclopédie Méthodique*,' that their food consists of particles of congealed blood; Baker, whose account is evidently compiled from earlier sources, says that they closely adhere to the bodies of animals and feed on their juices; other authors have stated that their food consists of fleshy particles adhering to the feathers and hair of animals. It seems to me highly improbable that this point will ever be definitely settled; we can do little more than arrive at the conclusion that they subsist upon the substances amongst which they are found; these are the bodies of unfledged pigeons, the nests of pigeons, the dung on the floors of dove-cotes, the interstices filled with dust between the boards of floors, &c. In the latter situation it is peculiarly difficult to conceive how the congealed blood is supplied, unless they were confined to Rizzio's chamber at Holyrood, where there appears to be an everlasting supply, perhaps still more profitable to the show-woman than to the fleas.

* Mr. W. Wing has repeatedly found the larva of the house-fly among the accumulated dirt of bird-cages, dust-bins, &c., and has promised me a description of it for the '*Zoologist*;' its food, however, as in the case of the maggot which produces the flea, is still conjectural.

"It has been discovered," says Baker, "by putting the eggs of fleas into a small glass tube, and keeping it constantly warm in one's bosom, that in the midst of summer, they hatch in four days: then feeding the maggots with dead flies, which they suck greedily, in eleven days they come to full perfection of their reptile state." This experiment, which, however, is not original, I cannot boast of having confirmed, but it seems far from improbable that it is strictly and literally true. After all, it is not perhaps a matter of vital importance on what the maggot feeds, seeing that its figure and metamorphosis are established beyond all question.

When full grown, the larva seeks out some crack or other safe place of concealment, and there, after remaining some time in a motionless state, spins itself a delicate cocoon of the softest and most slender silk: the interior of this cocoon is of the purest white, but the exterior is rougher and soiled with dust, and within this it changes to a pupa, which at first is of a milk white, but gradually changes colour, and finally assumes that of the imago. The pupa clearly exhibits the form of the future imago, the legs being distinctly visible, and all their articulations readily traceable; they are partially adherent to the body laterally, but are severally inclosed in a distinct case or skin: the pupa emerges from the anterior extremity of the larva, the pellicle of which, by the wriggling motion of the creature, is gradually pushed backwards, and finally adheres in a crumpled form to the posterior extremity. The pupa has thirteen segments, including the head; the terminal segment or telum is extremely small. There is a striking discrepancy in the accounts given by authors of the time occupied in the different states of larva and imago: thus we find some asserting that the state of egg lasts four days, that of larva seventeen days, that of pupa four days, and that the imago lays eggs in three days more; so that a calendar month suffices for the entire round of its existence, and a year for twelve such rounds. Others again describe the period as much more protracted, and make the round of existence occupy nearly a year. There is no reason for doubting the assertions of any of these observers, but the conclusions they deduce are not always equally unexceptionable. I have no hesitation in expressing my belief that the periods vary with the season, the temperature, and also with the species; and that no positive conclusions are to be drawn, until our observations are infinitely multiplied, and are recorded with greater precision.

The final change takes place within the cocoon, and the flea then perforates his silken dormitory and enters on his jumping career, in

which he is a formidable rival even to the glorious Baron Bohm Big, of jumping notoriety. With regard to the economy of the flea, now arrived at days of discretion, I am unable to give a very satisfactory account. Even in the instance of the jigger (*Pulex penetrans*), I take it that we really know nothing of its natural economy. I am aware that there will be many dissentients from this opinion; but such dissentients must show the probability that millions of jiggers are created annually, in order that some hundreds may serve as plagues to as many born Europeans who may chance to visit the West Indian Islands. Surely, the harvest-bugs, which we can only persuade to attack us by invading their native territories, the harvest-fields, were never created simply as an annoyance to man. With regard to the fleas which infest animals, more especially in a wild state, the circumstance that fleas similar to one another are found on the same species of animal, certainly gives some colour to the idea that they have a parasitic economy.

But even this requires further investigation, for I know from actual experiment that if a dog be washed, combed, and completely purified from fleas, you have but to take him an hour's walk in dusty roads, green meadows, umbrageous woods, in fact where you will, and on again examining him, you will find that he has proved himself a good entomologist, by collecting a great number of fleas, which are already luxuriating on his living blood. I certainly do not recommend such an absolute devotion to this branch of science as that exhibited by the Capuchin friar, who established a colony of jiggers in his foot, in order that the literati of Europe might examine them at leisure, but whose foot mortified, was cut off, and thrown to the sharks of the mid-passage, thus frustrating the devoted enthusiasm of its liege lord: but I do recommend a little more attention to the living history of these little jumpers, concerning which our knowledge is at present so circumscribed.

In connexion with the subject of normal economy, the following query may also suggest itself. What is the natural food of those ticks with which dogs are infested in autumn, immediately they commence their labours of traversing the "lands" of the "glorious stubble?"

EDWARD NEWMAN.

(To be continued).

ART. XXVI. — *A List of the Pomeranian Species of the Genus Lithocolletis; together with Descriptions of some Species of this Genus not mentioned in Zeller's Monograph.* By G. VON NICELLI, of Berlin.*

THE genus *Lithocolletis* will now number nearly fifty species, which are all distributed over Germany, Scandinavia, Livonia, England, France and Italy. The Italian *Lithocolletides*, as also the Italian *Microptera* generally, have been made known by German naturalists. Of the French authors, Duponchel was the first who, in his Catalogue of 1844, after Zeller's example, placed the *Lithocolletides* separate from the *Elachistæ*; and in England, Stainton first placed them as a separate genus in his 'Systematic Catalogue of British Tineidæ,' after, even in 1848, he had described them in the 'Zoologist' mixed with *Lyonetiæ* and *Cemiosomæ*, &c., under the generic name *Argyromiges*. Of other European countries, the larger *Microptera* are hardly known to us, much less these small species, which appear to require so much care and trouble. Even in Germany, the treatment of the lower groups of Tineidæ is much neglected, since only a few individuals venture upon them, whose labours are however crowned with such astonishing success.

In my note on the Pomeranian species, I am obliged to confine myself to my own observations, which naturally cannot be very numerous; yet, I lay before the reader a catalogue of twenty-six species, the result of two years' labour.

Were I not shortly leaving our rich localities, I might expect in some years to find out a still greater number.

I have permitted myself to alter slightly the arrangement of the species, in consequence of the introduction of some species omitted in Zeller's Monograph (Linn. Ent. i. 166), which are described in the annexed treatise.

The species met with are as follows: —

LITHOCOLLETIS.

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| 1. <i>roboris</i> , Z. | 5. <i>coryli</i> , (m.) |
| 2. <i>Saportella</i> , Dupch. | 6. <i>pomifoliella</i> , Tischer. |
| 3. <i>Amyotella</i> , Dupch. | 7. <i>pomonella</i> , Zell. |
| 4. <i>distentella</i> , F. v. R. | 8. <i>ulmifoliella</i> , Hübner. |

* Translated from the Stettin 'Entomologische Zeitung' for February, 1851, pp. 34—51. By H. T. STAINTON, Esq.

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|---|-------------------------------------|
| 9. spinolella, <i>Dupch.</i> | 18. emberizæpennella, <i>Bouché</i> |
| 10. capreella, <i>Woche.</i>
(angulatella, <i>m.</i>) | 19. tristrigella, <i>Haw.</i> |
| 11. cavella, <i>Z.</i> | 20. Frölichiella, <i>Z.</i> |
| 12. quercifoliella, <i>F. v. R.</i> | 21. Kleemannella, <i>Fab.</i> |
| 13. connexella, <i>Z.</i> | 22. lautella, <i>Heyden.</i> |
| 14. alniella, <i>Tisch.</i> | 23. ulminella, <i>Z.</i> |
| 15. Heegeriella, <i>Z.</i> | 24. pastorella, <i>Heyden.</i> |
| 16. Cramerella, <i>Fab.</i> | 25. tremulæ, <i>Z.</i> |
| 17. tenella, <i>Z.</i> | 26. populifoliella, <i>Tr.</i> |

1. *L. roboris*, *Z.* This is very scarce in the entire neighbourhood of Stettin. After I had long in vain sought for it, I bred one specimen from some pupæ which, at the beginning of April, 1848, I had collected in the still leafy, small ash-wood, near Hokendorf, on the right bank of the Oder. I have no other Pomeranian specimen.

2. *L. Saporrella*, *Dup.*, is no rarity in thickly-leaved woody places, especially where fir-trees and others are intermixed. The chief locality for this species is the patch of wood in the Polchower ground, where it frequents the lofty oaks, (*Quercus pedunculata*). In that place we collected the pupæ in the fallen oak-leaves, quite late in October, and these furnished us with an abundant harvest of specimens. Kept in a warm room, the perfect insects appeared through the whole of February; only a few remained until March. The period of flight in the open air is with us from the middle of May till June. I have not observed the second brood here, but in the Mark I found it at the end of July and beginning of August. It occurs near Stettin in the Falkenwald forest, at Julo, near Eckerberg, but nowhere so abundant as near Polchow. Near Vogelsang, where there are many of these oaks, it does not occur.

3. *L. Amyotella*, *Dup.* Likewise very sparingly on oaks near Stettin, but more abundant at a greater distance. I first found it near Eckerberg, in the middle of October, 1848, as pupæ, along with other oak-miners, naturally without being able to distinguish them. On the 1st of October, 1849, I found they were yet larvæ, as most of the species of *Lithocolletis* do not assume the pupa form until the middle of that month. Kept in a warm room, where the white glass-pots stood near the double window, the perfect insect appeared from the middle of January to the end of February. The period of flight, in the open air, also occurs somewhat earlier than that of *Saporrella*. The second brood, which appears more abundant than the first, flies from the

middle to the end of August, and may then be easily beaten from the lower boughs of the oaks. It occurs wherever there are lofty oaks, and often sits in the crevices of the bark. At Julo I did not find it.

4. *L. distentella*, *F. v. R.*, must be very rare. In the Polchower ground, on the 21st of May, 1849, in the afternoon, amongst many of *Saportella*, I beat a single, but very beautiful and large specimen of *Distentella*.

5. *L. coryli* (n. sp.), *Nicelli*. *Alis anterioribus obscure aureis, lineâ basali tenuissima alba, strigulis costæ quatuor, dorsi tribus albis, striola apicis atra, tarsis* posticis albis nigro annulatis.*

A species which even the tyro must take to be distinct from *Pomifoliella*. From *Pomonella* it is easily distinguished by its very distinctly spotted hinder tarsi; from other nearly allied species, the streak at the apex of the wing separates it. From *Pomifoliella* it is distinguished by the ground colour of the anterior wings, which is golden-yellow in *Pomifoliella*, but golden-brown in *Coryli*; besides which it is distinguished by the basal streak, which is very fine, and of equal breadth, whereas that of *Pomifoliella* becomes broader towards the end; and lastly, by an uninterrupted longitudinal white line on the thorax, this line being in *Pomifoliella* indistinct and interrupted.

Size of *Pomifoliella*, not unfrequently larger. Face and palpi shining white, antennæ pale, faintly annulated with black. Tuft whitish, above more or less browned or darkened. Thorax colour of the anterior wings, a fine white line runs through the entire length of it, sides of the thorax white. Legs white, hinder tarsi with two very distinct black rings.

Anterior wings dirty golden-yellow, having a dirty appearance from the numerous small black atoms scattered over the entire disk of the wing, these atoms occur in different specimens in greater or less numbers. From the base arises the very fine longitudinal line, which, together with the ground colour, is the characteristic of the species. It remains of equal breadth throughout, and terminates in the fold of the wing. In *Pomifoliella*, the basal streak is thickened towards the end, transcends the fold of the wing towards the costa shortly before, and soon after ends thereon bluntly, and is also shorter than in the present species. The opposite spots are placed as in *Pomifoliella*, also the markings at the apex of the wing are the same, only the black shading between the costal and dorsal spots, which is in *Pomifoliella* united to the black streak, is wanting. The hinder marginal line is hardly sharper.

* In the original the word *tibiis* occurs; an evident misprint.

This species mines in the leaves of the hazel (*Corylus Avellana*), not rarely in all leafy woods near Stettin. It loosens the thin upper skin of the leaf to a considerable extent, then draws the loosened part together in many narrow folds, by which the abode of the larva assumes an almost cylindrical form, at least like the leaf itself, a very irregular appearance. The cocoon is light and fine; the pupa itself pale brown. I do not know the period of flight, since I never met with it in the open air.

Note 1. — I first found *L. coryli* as pupæ on the 8th of October, 1848, near Eckerberg, in the meadow. In the warm room I obtained specimens from the end of December, through January and February, to the beginning of March. From this I conclude that it has a very extended period of flight. It occurs most abundantly at Polchow and Eckerberg, but also at Vogelsang and Falkenwald.

Note 2.—*Details of the mined abode and larva.* The abode of the larva is of so peculiar a form that one thereby very easily recognizes the presence of the *Lithocolletis*. When the young larva, after its exclusion from the egg, has bored into the leaf from above, it begins by loosening the very fine upper skin of the leaf to a great extent; during this process it appears only to feed on the fibres which fasten the skin to the flesh of the leaf, and which it is obliged to loosen. It afterwards curves the mined abode by many folds in the upper skin of the leaf, which at the time of its transformation it draws closer and closer together. If it begins with the curving its abode, it then proceeds afterwards to the consumption of the pulp of the leaf at the loosened place.

The abode is generally so situated that a side rib of the leaf bisects it; when the larva draws the folds together, it always places them closer and closer to this rib, so that the leaf finally, as seen from above, has only a longish elliptic spot pointed on both sides, the two points of which are on the rib of the leaf. The larva collects its excrement into little heaps in a corner.

The larva itself is of the size of the larva of *L. ulmifoliella* (2—3 lines long); head and feet as usual, ground colour pure yellow, the first segment has only a slight deposit of darker atoms, the second very broad segment is darker yellow. In most of the segments the anterior margins are black, the black incision-lines are wanting between the second and third, the seventh and eighth, the eighth and ninth, and the eleventh and twelfth segments. After the third ring, as is usual in the larvæ of *Lithocolletis*, the eaten pulp of the leaf appears as a green originally brownish streak. The pupa is small, and

reposes in a fine cocoon. There appears also to be a summer brood, but certainly the spring brood has, in the preceding autumn, the most abundant supply of larvæ.

6. *L. pomifoliella*, *Tisch.* I met with this in the pupa state in October, 1848 and 1849, on scattered bushes of *Prunus communis* and orchard trees of all kinds. From these I obtained specimens in January. In the open air the species flies uncommonly early; I found a beautiful specimen, a variety, as early as the 7th of May at Polchow. At the end of July the summer brood is to be found in all the three stages of larva, pupa and imago at the same time. It is not exactly very abundant.

Note 1.—Not only the following species, *L. pomonella*, but this also, furnishes many difficulties. Here is an example:—I found on whitethorn, at the end of September, a larva which was quite different from the accurately observed larva of *L. pomifoliella*, yet the moth differs in nothing but a deeper ground colour from an ordinary *L. pomifoliella*.

The mined abode is narrow and rather short; it lies on the edge of the leaf, and runs between two side ribs, somewhat into the heart of the leaf. The lower (loosened) skin of the leaf is dirty brown, laid in several irregular folds, (generally it is pale green); on the upper side there is nothing peculiar about the abode. At the marginal end of it the larva collects its excrement into a little heap. The larva itself is hardly so large as is usual in *Pomifoliella*; the very distinctly heart-shaped head is quite black, polished, and proportionally larger than in other more considerable species. The colour is dirty white, on the two or three last segments clearer. On the first segment is a broad but short spot, which is black, shining, and divided lengthwise in the middle, similar in form to the spot on the first segment of the larva of *L. connexella*. The back is brownish, from the food showing through. On the under side there is nothing extraordinary, except the perfectly black legs.

On the other hand, I have described the larva of the ordinary *Pomifoliella* from orchard trees, as follows:—

Larva thin, pure citron-yellow, anteriorly clearer; the incisions beneath are a little darker; head likewise only a little darker than the colour of the skin, legs paler. The second and third rings are scarcely broader than the rest of the body; at the anus the larva is more rounded than pointed. On the seventh and eighth segments is a pale brown, roundish spot, it is not sharply defined, and is marked with darker dots in the middle, the division of the segments does not

interrupt it. The entire larva is from 2 to $2\frac{1}{2}$ lines long, shining, and clothed with very fine hairs. The mined abode in apple-leaves is often near the margin, often at the midrib, and then placed between two veins. The lower skin of the leaf is curved and laid in several folds. The larva collects its excrement into a heap in a corner. The pupa reposes in a light irregular cocoon.

The perfect insects, as already mentioned, differ only in the ground colour, since the whitethorn miner is far darker than *Pomifoliella*. On this character no specific difference can be grounded.

Note 2. — A species which Professor Ratzeburg bred by hundreds from mountain ash (*Sorbus Aucuparia*), at Neustadt-Eberswald, and of which I have only met with two specimens here, should, if the species were new, be placed after this. Have we probably found out the *Elachista* (*Tinea*) *cydoniella*, *Dup.*, *Fabr.*, which Zeller in his Monograph quotes to *Pomifoliella* with (??)? The coming season will prove it.

Note 3.—In the ‘*Bidrag till Finland’s Fjäril-Fauna af Tengström*,’ p. 153, *Pomonella*, *Zell.* (*Blancardella*, *F. Zett.??*), is given as a frequenter of *Prunus Padus*, and also of *Sorbus Aucuparia*. I suspect that some error lies at the bottom of this, since probably the species found on *Prunus Padus* is *Pomifoliella*, and that on *Sorbus Aucuparia* is also not *Pomonella*, but the still uncertain species mentioned in Note 2.

7. *L. pomonella*, *Zell.*, is with us far commoner than *Pomifoliella*; we find this species always certainly on the beech, whether that upon the hornbeam be not another species, appears to me doubtful.* *L. pomonella* is common wherever the beech occurs, in hedges and in our woods, where the spring brood is often met with in swarms. One collects the pupæ best from the middle to the end of October, it is also still practicable in the early spring. The moth appears both in the room and in the open air, considerably later than *Pomifoliella*. In the room I first obtained it on the 11th of March. Its period of flight is May, (on the 13th of May, 1849, by thousands at Hokendorf).

8. *L. ulmifoliella*, *Hüb.* Abundant on birches everywhere around Stettin. They first assume the pupa state about the middle of October; in the warm room the moths come out from the middle of December to February. A second, but less abundant brood, occurs in the larva state at the beginning of July. The larva not unfrequently chooses the point of a birch-leaf for its abode; the greenish white

* Von Nicelli has evidently here mixed *Faginella* and *Carpinicolella* together as *Pomonella*: see my remarks at the end.—*H. T. S.*

lower skin of the leaf is not laid in one stout fold, but in many small folds, so that it assumes a wrinkled appearance, the leaf then appears with the point recurved. The larva begins at the edges of its abode, and gnaws the pulp of the leaf from the epidermis gradually round and round, and often leaves some of it standing in the middle, when the abode is so laid out, that the pulp of the leaf in it is more than sufficient to nourish the larva till the period of its transformation arrives. Its excrement is not collected, but lies scattered about; however, before its metamorphosis, the larva appears to heap it together, and fastens to the heap, the fine but firm cocoon. The larva itself is stout, 2 lines long, pale yellow except the posteriorly interrupted green dorsal streak, which however only arises from the food showing through. The interruption of this streak posteriorly into separate detached spots, appears to arise from the digested portions of the food, as they slide down its intestines, becoming placed in small clusters. The legs of the larva are pointed, greenish and yellow, transparent. Prolegs very small. The body is beset with very fine hairs: the first segment is not so fleshy as the following, more horny, and sprinkled with darker atoms; the sap-green colour of the back begins at the third segment, where probably the expansion of the stomach begins. The larva is very subject to the attacks of *Pteromalinae*.

9. *L. Spinolella*, Dup. *Alis anterioribus dilutè croceis, in apice nigro-squamatis, linea baseos longitudinali nivea, postice in-crassata, striga crassa strigulisque costæ 3, dorsi 2, niveis; thorace capillisque flavis.*

Argyromiges Spinolella (Dup.), *Stainton in Zool.* 1841, p. 2085, f. 4.
Lithocolletis Spinolella, *St. Syst. Cat.* p. 30.

Var. *b.* *Strigulis costæ tantum duabus; apice vix nigro squamato, ♂.*

Var. *c.* *Strigularum dorsi duarum maxima secunda; alarum dimidiis inter apicem et strigam mediam toto nigro squamato.*

This species, new to Germany, but previously observed in England by Stainton, comes next to *Ulmifoliella*, and is also nearly allied to *Cavella*. From this species it is easily distinguished by the darker golden ground colour, the far blunter interrupted fascia, the pale yellow head, which in *Cavella* is always white, and lastly by the coarse scales towards the apex of the wing being hardly united so as to form a spot, whereas *Cavella* has a very fine bowl-shaped spot.

From *Ulmifoliella* it is readily distinguished by the paler saffron-yellow ground colour, the distinct snow-white markings at the apex of the wing, and the colour of the body of the female.

Size generally the same as *Ulmifoliella*. Face and palpi white, head pale yellow, in a few specimens more of a white colour (generally the head of the female is paler than that of the male). Thorax of the colour of the anterior wings, bordered with white, also whitish in the middle in some specimens; antennæ faintly annulated, usually most distinct in the middle, before the apex white, the two or three last joints black. Legs whitish, on the shady side dark; hinder tarsi pure white. Body of the male black-gray, the anal tuft yellowish; of the female pale gray, nearly the whole of the posterior half and beneath pale yellowish. In the female of *Ulmifoliella* it is black-gray, posteriorly pale yellowish, which colour is continued along the back in a long, sharply defined streak.

Anterior wings shining, pale saffron-yellow, paler than in *Ulmifoliella*, darker than in *Cavella*; a pure white longitudinal line arises from the middle of the base, it is even shorter than in *Ulmifoliella*, increases in breadth towards the end, is almost club-shaped, it runs midway between the costa and inner margin, nearly one-third of the length of the wing, and is on both sides clearly margined by the ground colour. The inner margin has at the base a white line, of variable breadth, posteriorly thickest. The wing is intersected nearly in the middle by a slightly curved, broad, snow-white fascia, internally margined with brown, between it and the apex of the wing the space is sometimes almost entirely filled up with blackish scales; on the costa, following one another closely, are three white streaks, internally with brown margins, they are acutely triangular, with their apices turned outwards, the spaces between them are often shaded with dark brown; the streak nearest the apex of the wing is generally the largest; on the inner margin are two similar small triangles, also internally margined with brown, their apices are directed between the costal streaks. The first inner marginal spot is blunt-pointed, the second appears merely as a small blotch partly on the cilia, there is no hinder marginal line. Between the last costal and the last inner marginal spots lie the black scales of the apex of the wing, (sometimes they are entirely wanting). The cilia of the hinder margin are whitish, with a dark patch at the anal angle. The under side is more or less blackish, with the costal spots distinct, but the fascia faint.

Posterior wings shining gray, paler than in *L. ulmifoliella*; cilia paler gray.

L. Spinolella occurs, as far as I know, only near Stettin, upon sallows, where it is scarce; nevertheless, at Vogelsang, a mile and a half from the town, it was so common in 1849, that there was not a sallow-

leaf there free from them. In the open air it appears about the middle of May. There are two broods, the most numerous of which proceeds from the autumnal larvæ. The pale yellow larva mines the leaf at a convenient place, and is not, like other species, confined between the veins of the leaf, since the veins of the saw-toothed leaf are fleshy and easily bitten through. The epidermis is drawn together in many small folds, and so forms the cavity of the dwelling; the form of it is by no means regular. The larva collects its excrement into a heap in a corner, and generally forms its cocoon in the middle. The cocoon is transparent and very fine, and contains a pale brown pupa.

Note.—I bred in the winter of 1849-50, upwards of 150 specimens of this species. Round Stettin it occurs at Eckerberg, abundantly, and is very common at Vogelsang; also, though scarce, it is to be found at Fort-Prussia and Julo.

10. *L. capreella*, Wocke (*L. angulatella*, Nic.), n. sp. *Alis anterioribus croceis, linea baseos longitudinali, strigulis costæ 4, dorsi 3, introrsus fusco-marginatis albis, ante apicem squamis nigris, capillis luteis.*

This species is most nearly allied to *L. ulmifoliella*, *L. Spinolella*, *L. cavella* and *L. Junoniella*; from the first species it is separated by the less bright saffron-yellow ground colour, by the fascia being divided into two acute, angulated streaks, by the unmarginated basal streak, and by the apex of the wing; from *L. Spinolella* it is distinguished by the presence of a hinder marginal line (though false, going through the cilia), by the angulated streaks instead of the fascia, and by the tuft on the head; from *L. cavella*, by the deep loam-yellow hairs of the head, the darker ground colour, and the apex of the wing; finally, from *L. Junoniella*, by the unmarginated basal streak, and by the scales at the apex of the wing not being collected into a large ocellated spot. From *L. fraxinella* it is certainly distinct, since the first pair of spots are not united into a fascia, but always remain separate, since the basal line takes up more than a third of the length of the wing, and the opposite spots are so placed that the apex of the dorsal spot (also in the male) is further inclined than that of the costal spot to the apex of the wing.

Size of *L. Spinolella*, with narrower anterior wings. Face and palpi shining white. Tuft of the head dark loam-yellow. Antennæ as in *L. Spinolella*. Legs white; the anterior plentifully spotted with brown; the posterior legs white; the tibiæ darker, the tarsi faintly spotted; the anterior tarsi are also spotted in the female.

The thorax, which has a white longitudinal line, and the anterior

wings are almost of the colour of *L. Spinolella*, paler than in *L. ulmi-foliella*. The basal line comes nearly out of the middle of the base, it remains nearer the costa than the inner margin, is fine, hardly thicker towards the end, and terminates in a blunt point at one third of the length of the wing; before the half of the wing are the first pair of opposite spots, which run towards one another nearly in a right angle, and end near the point of the basal streak; the inner marginal spot, which is the largest, lies nearest to the base. At the base of the inner margin, nearly midway between the base and the first dorsal spot, is a blunt, distinct, unmarginated white triangle, from which a very fine white dorsal line is produced towards the base. The second pair of opposite spots are internally margined with brown, and certainly more strongly than the first pair; both spots are nearly of a size, narrow, and that on the inner margin has its apex directed more towards the apex of the wing than that of the costal spot; in the male there is a dark shade between their apices, which sometimes also reaches to the black scales of the apex of the wing. The third pair of spots are unmarginated and small. On the costa near the apex is a larger, triangular, likewise unmarginated, odd spot, to which the black scales are annexed. These in the male are only in the form of a streak, in the female, on the contrary, they assume the form of a larger spot. In the female, the space between the first two opposite spots is greater, and besides, the dorsal spot is the smaller of the two; whereas in the male, the costal spot is the smallest.

At the apex of the wing is a distinct hinder-marginal line, but this is lost at the anal angle; cilia gray-yellow. On the under side all the spots and hinder-marginal line show through. Posterior wings shining dark gray, the cilia somewhat lighter. Abdomen gray, with the anus paler.

Of this scarce species I bred three specimens (two males and one female) from *Salix caprea*, from Eckerberg, together with *L. Spinolella*; near Vogelsang, where the latter was so common, I have not yet found it. The period of flight is unknown to me.

Note. — Herr Dr. Wocke took this species in the Silesian mountains, a proof that it is widely distributed, and occurs in very different localities.

11. *L. cavella*, Z. This scarce species, first detected by Herr Zeller near Glogau, also frequents the birches with us, although very scarce, and two miles from Stettin. Hitherto I have only found it on young birches, near Falkenwald, in the autumn of 1849. From the leaves of these trees, which grow in a very sandy place among fir-

trees (*Pinus sylvestris*), I bred along with *L. ulmifoliella*, two beautiful specimens; one on the 7th of January and the other on the 1st of February.

12. *L. quercifoliella*, *F. v. R.* Common on oaks everywhere, in the autumn, in the larva and pupa states. In the room the moths appear from the end of December to the end of February. In the open air it appears in May, the second brood at the end of July, and in August. also occurs at Ueckermünde.

13. *L. connexella*, *Z.*, is a species easily recognized by the larva, even before one has succeeded in rearing the perfect insect. I first met with some pupæ of it in the middle of October, 1848, upon some smooth-leaved willow-bushes, along the ditch near Eckerberg, behind Steinfurt's mill, and from these I bred three specimens at the beginning of March. In 1849, at the beginning of July, I found the summer brood yet as larvæ and pupæ, and bred from them small dirty specimens, so that I suspected I had found a new species allied to *L. connexella*; it was, however, as mentioned, only the summer brood, but differing in size and colour. The spring brood is much larger, and more distinctly marked, and appears in heated rooms from the end of January to the beginning of March, always singly. I found it, not far from Stettin, on the smooth-leaved willows bordering the pioneers' practising-ground at Alt-Torney, which grow on dry sand; near Krekow in the willow-plantation, sparingly; near Eckerberg on the willow-bushes along the ditch, and more abundantly in the meadows, but not so plentifully as at Alt-Torney. I never met with the perfect insect in the open air, but the period of flight of the summer brood must be the second half of July, since it was about that time that I bred the specimens. Although I had bred the spring brood up to March, I cannot therefrom decide with certainty its period of flight out of doors.

The larva and its food.—The mined abode is generally in the middle of the length of the leaf, and almost always occupies half the breadth of the leaf, since it is placed between the midrib and the edge of the leaf. The inhabited spot is easily detected from above by the yellowish colour, which arises from the green pulp of the leaf being devoured, and besides, by the margin of the leaf being somewhat turned inwards. The growing larva places the lower (loosened) skin of the leaf together, forming a stout fold; from the curving of the leaf which thereby arises, the mined abode assumes the arched form which is necessary in order to make room for the larva, and afterwards for the cocoon of the pupa. The larva has its place of repose precisely

in the middle of its abode, where it also collects its excrement into two rows, and afterwards forms the cocoon of the pupa between them. The larva is stout, 2 lines long; its middle rings, from the eaten pulp of the leaf showing through, are sometimes greenish, sometimes darker, otherwise the ground colour is pale yellow. The head and thorax are greenish-yellow at the edges, and the ends of the jaws black. The legs are sharp, rather darker than the skin, and the two of each pair stand proportionally far apart. The prolegs appear as imperceptible eminences; of the anal prolegs I can see no trace. On the skin I observe very minute warts, on each of which is a small hair. The characteristics of the larva are very striking. Each ring has on the upper side a short, but broad spot, which is more convex in front than behind, and of a grayish yellow colour. These spots are all raised above the surface. The spot on the first ring is divided lengthwise, that on the second is the largest of all, the others gradually diminishing. Previously to its transformation, the larva forms at its place of repose a fine elliptical cocoon, in which it spins up its excrement. The pupa (at the beginning of July and middle of October) is almost 2 lines long, goes gradually to a point behind, and has a very short caudal spine; the wing-cases are drawn out to a fine point, and reach distinctly beyond the three-fourths of the pupa. The palpi- and tongue-cases are distinct, pointed, directed beneath, and projecting. The colour is a very dark black-brown, the rings of the body rather paler.

14. *L. alniella*, *Tisch.* Very common every year on alders, in the pupa state. At the beginning of October, it is generally still in the larva state. The larva is very pale, with transparent green streaks and spots; without further characters. The abode of the larva lies generally in a corner, between the stout main rib of the leaf and one of the side ribs; it is moderately arched, and a small fold runs along the epidermis in the middle, this is erected, not turned down or wrapped over, as in most species; the abode is usually therefore triangular; rarely, it is placed between two parallel side ribs. The cocoon of the pupa lies in the middle, it is dark yellow, of the consistence of paper, very firm, and well fastened to the skin of the leaf: the pupa is brown. Along with *L. alniella*, I found at Eckerberg *L. Frölichella*, which, being distinguished by its large mined abodes, is easily detected from the outside. Both species frequent *Alnus glutinosa* as well as *A. incana*.

L. alniella appears in the room the earliest of all, from the middle of December to the middle of January, after that only sparingly. The

period of flight of the spring brood is the beginning of May, partly even in April. The time of the summer brood has escaped me.

It is by no means rare round Stettin, among the scattered alders of the extensive meadows by the Oder; on the alders along the ditches and streams at Eckerberg, at Polchow, Falkenwald, Julo, Vogelsang, Hökendorf, &c.; indeed it is the commonest species near Stettin. It also occurs at Ueckermünde.

15. *L. Heegeriella*, *Z.* A species hardly any rarer near Stettin than *L. alniella*. I was much surprized when I repeatedly bred this species, (at least it appears to me from Zeller's Monograph, that it must be this species). I first found the pupæ of the spring brood near Eckerberg, in the autumn of 1848, and obtained the Lithocolletides therefrom in the February, March and April of the following year. About the middle of October, 1849, I found the pupæ on oaks at Eckerberg, Polchow, Falkenwald and Julo; I never met with it at Vogelsang, nor on that side of the Oder. It likewise occurs at Ueckermünde, and everywhere frequents oaks, both old and young trees. The period of flight is in the second half of May, especially at the end of that month. The second brood appears together with *Cramerella*, *Amyotella*, &c., in the last ten days of August, but is not so plentiful as the first.

16. *L. Cramerella*, *Fabr.*, is very common in Pomerania upon oaks, more especially on large trees, from the lower branches of which I collected it; at Falkenwald and Vogelsang it is common; at Polchow scarcer; at Eckerberg and Julo only singly. In the room I obtained the moth from the beginning of January to the end of February. It occurs at Ueckermünde also.

17. *L. tenella*, *Z.*, also occurs near Stettin, but is very scarce on oaks.

18. *L. emberizæpennella*, *Bouché*, mines the leaves of *Lonicera Caprifolium*. I found it already in pupa towards the middle of September, thus very early in comparison with the other species; I collected it principally in the Polchower ground: it is abundant there, and in the leafy wood near Vogelsang, in moist places, where alone the plant grows. The leaf of the *Lonicera* is very soft and tender; the mined abode, which in this species is very large, cannot therefore be made firm by a single fold of the epidermis, as in the oak-miners. The epidermis of the abode, which runs along the mid-rib, is placed by the larva in many strong folds, by which, though in itself of a very delicate blue-green, it appears wrinkled and whitish green. The entire leaf gets thereby much bent, and principally from this, one easily

detects the inhabited leaf from above, even when the pulp of the leaf has not yet been eaten. The abode is consequently large and irregular, the excrement not collected into a heap, and the pulp of the leaf is irregularly eaten at the margins, and in patches in the middle. The larva itself is rather large, fully one-third of an inch long. The food showing through, gives the back a pale green longitudinal line; if the larva is full grown and preparing to change to the pupa, it expels all the excrements and unnecessary juices from its body, and then appears entirely of the ground colour, which is yellow. The head is small. The larva is an exception to all others of this genus in its form, not being broader in front than behind, being gradually pointed from the middle to the head. The beautiful, clear, pale brown, rather large pupa, with a pointed and black-spotted head-end and long back-sheath,* which is continued nearly to the caudal extremity, reposes in a very firm, thick, papery-like cocoon, of dark green colour and oval form, which is only loosely fastened in the leaf.

I collected several hundred pupæ, but obtained therefrom not a single specimen, since they all dried up. From three or four pupæ, collected later at Falkenwald, I obtained, on the 26th of February last year, a single female specimen. There are two broods, but I do not know the period of flight of either.

19. *L. tristigella*,† *Haw. Minor, alis anterioribus saturate-croceis; (antennis albis fusco annulatis, ante apicem albidis); strigis duabus curvatis aut subfractis strigulisque tribus costæ, duabus dorsi argenteis, introrsum fusco marginatis, apice atro squamato.*

Var. *b.* *Alis anterioribus vix croceis, sed aureis.*

Argyromiges tristigella, Haw. Stainton, Zool. p. 2087, 8, f. 9.

Lithocolletis tristigella, Stainton, Syst. Cat. p. 31.

This species, the nearest allied to *L. Frölichella*, would be difficult to distinguish from it, did not the difference of size render it so easily recognizable. *L. Frölichella* is the largest species of the genus, *L. tristigella* is hardly so large as *L. ulmifoliella*.

Face, palpi, antennæ, legs and abdomen as in the allied species; tuft of the head dark loam-yellow; in *L. Frölichella* the tips of the hairs of the head are usually pale yellow.

The anterior wings are not quite so deep a colour as in *L. Frölichella*.

* Query, tongue-sheath? I suspect a misprint of Rücken for Rüssel.—*H. T. S.*

† Not *Tristigella*, *Haw., St., Sta.*, but a new species, very closely allied to *Frölichella*, and for which Herr Zeller suggests the name *Nicellii*.—*H. T. S.*

ella. At a fourth of the length of the wing from the base stands the first striga, which is more curved than in *L. Frölichella*, or even distinctly interrupted; nearly on the middle of the wing follows a second similarly formed striga. The first pair of opposite spots are two-thirds of the length of the wing from the base, and not unfrequently run together at their apices, forming a third, bluntly angulated striga; both spots are internally distinctly margined with brown; the following smaller pair of opposite spots, as well as the odd costal spot, are often faint.

All the markings are more distinct and decided than in *L. Frölichella*, the black scales at the apex of the wing are not generally so scattered as in that species, but are more collected into an elliptic or streak-shaped spot; beyond them a rather sharp, brown line runs through the cilia, which are yellowish, darker at the anal angle.

The under side is blackish, with the markings showing through, and reddish cilia. Posterior wings as in *Frölichella*.

This species is not quite so abundant near Stettin as *Frölichella*; however, in the autumn of 1848, I obtained so great a number of pupæ, that I was unable to set out all the moths that they produced. It mines in the leaves of the hazel, and is frequently a companion of *L. coryli*; in collecting them, one can easily distinguish the habitations of the two species.

L. tristigella mines *beneath* the pulp of the leaf, and its abode is very similar to that of *L. Frölichella* on *Alnus incana*, but less so to that on *A. glutinosa*. The period of flight is the end of May; I have not yet met with a second brood.

The larva and its abode.—After carefully separating the mining larvæ of *L. tristigella* and my *L. coryli*, I have described the former as follows. The abode in the hazel-leaf is always bordered on both sides by two ribs of the leaf, and is generally very long and narrow; in the middle of the epidermis are some folds. The larva collects its excrement in a corner of its abode. The first segment of the larva is somewhat expanded, and has a black, twice-interrupted, transverse streak; the ground colour is dirty green; head small, dark, heart-shaped; thorax divided lengthwise, once on each side; legs distinct, the two first, one sees project right and left from the head; first three pair of prolegs quite distinct; anal pair imperceptible. The larva is lively. The cocoon of the pupa, which generally is not narrower than the entire abode, lies almost between the skins, and is rather firmly fastened to them, it is yellowish, and of the consistence of paper; the pupa itself is shining pale brown.

L. tristigella appears to be a species more attached to northern localities. Here, at Stettin, it was abundant last year, but this winter I bred it far more rarely. It occurs most abundantly at Eckerberg, at Polchow and Vogelsang; I know of no other locality for it. In the room (as well as at large, for I have met with the spring brood) it appears earlier than *L. Frölichella*, generally in January, and even at the end of December; more rarely in February.

Note.—On account of the great similarity between this species and *L. Frölichella*, I have altered the diagnosis of the latter in the following way:—

20. *L. Frölichella*, Z. Major: *alis anterioribus saturatè croceis, (antennis albidis fusco annulatis, ante apicem albidis); strigis duabus subcurvatis strigulisque tribus costæ, duabus dorsi argenteis, introrsum fusco marginatis, apice atro squamato.*

I found this at Eckerberg on *Alnus glutinosa* and *A. incana*; the mined abodes are different on the two plants. Those on *A. incana* much resemble those of *L. tristigella*; those on *A. glutinosa* are more like those of *L. alniella*, yet far more expanded, placed in many small folds, and containing a fine cocoon, which is white and paper-like, more rarely is it yellow: the large pupa is shining and brown.

I bred twelve specimens last winter, in a short time, from about the 3rd to the 26th of February. As far as I know, it only occurs at Eckerberg, which, in respect to this genus, has produced an abundant harvest of rarities.

21. *L. Kleemannella*, Fab. Is very scarce near Stettin, and only found at Eckerberg. It lives upon alder-leaves; but I have not distinguished the abode of the larva from that of the numerous *L. alniella*. I obtained one specimen in January, 1849, and a second on February 26th, 1850.

22. *L. lautella*, Heyd. This insect, in spite of the longitudinal streak at the base of the anterior wings, must be placed in this section,* and is one of the most beautiful but rarest species round Stettin, where it occurs everywhere, but only singly. I have often bred it, especially in the winter of 1848-49, and certainly at the end of December and in January. In the open air I never met with it, and cannot therefore announce the period of flight with precision; but it may be concluded from the foregoing that it flies at the same time as those species which escape from the pupa along with it.

* See on this subject 'Note on the Labours of the Entomological Section, in the Year 1848,' by Professor Gravenhorst, p. 19: 'Contributions to the Knowledge of the Species of *Lithocolletis*,' by Dr. Wocke, of Breslau.

23. *L. ulminella*, Z., I had long sought in vain, but at length found several pupæ on the 26th of September, 1849, on small bushes of elm, along the ditches (not the mill-stream) before Steinfurt's mill, near Eckerberg; from these I bred only three specimens, February 18th—22nd. In 1850 I found it on the 21st of September, still in the larva state. The period of flight is May.

24. *L. pastorella*, Heyd., is also one of the few species of *Lithocolletis* which is easily recognized in the larva state. It mines in willow-leaves, but almost always on trees, only very rarely have I found it on bushes, which however were already growing into trees. It has the peculiarity of frequenting rows of trees. I found the pupæ on the 7th of October, 1848, on the willows of the Ueckermünde high road; the larvæ on the 26th of September, 1849, also on willow-trees which surrounded the mill-pond at Eckerberg; but far more abundantly on the willow-trees near Eckerberg, along the high road from there to Ueckermünde. The mined abode is generally between the midrib and the edge of the leaf, and takes up with its breadth half the breadth of the leaf. The midrib of the leaf is never undermined; the epidermis is placed in a stout fold, which generally runs parallel with the midrib; the hypodermis has a dappled appearance from the parts of the leaf being eaten away irregularly. The excrement is collected into a little heap. The stout larva has a heart-shaped head and an unspotted thorax. The 1st and 3rd segments are of equal breadth; the 2nd is the broadest of all; at the 4th segment the body becomes suddenly much narrower, but at the 8th segment it is again very broad, and becomes again more pointed towards the end: the 7th, 8th, 9th and 10th segments (sometimes also the 6th and 11th) are citron-yellow, the remainder clear white. The chief characteristic of the larva consists in the seven raised, black-brown (generally longish, round) spots, which occur on the 5th, 6th, 7th, 8th, 9th, 10th and 11th segments; the 12th segment has two shorter spots behind one another, or one interrupted breadthwise. The spots, so striking to the eye, cause the larva to be immediately recognized. Pupa blackish, its cocoon very fine. Period of flight the middle of October.

Note. — Of this and the following species it must be remarked that the autumnal larvæ undergo all their metamorphoses in the same year. These species have consequently a summer and an autumn brood; the spring and early-summer larvæ producing the summer brood, and the late-summer and autumnal larvæ the autumn brood. In most of the other species there is a spring brood, arising from the autumnal

larvæ, and a summer brood from the larvæ which feed in the spring and summer.

25. *L. tremulæ*, Z., is abundant at Eckerberg, Polchow, Falkenwald, and also at Ueckermünde. The mined abode of this species, in the leaves of the aspen (*Populus tremula*) is partly pure white, partly of a beautiful rose-colour, often also dirty brown on the epidermis; the latter colour may probably be accounted for by the advanced period of the year. In 1849, I found a larva on the 8th of September. The perfect insects appear still earlier than *L. pastorella*, from the end of September hardly to the middle of October. The first brood appears after the middle of July.

26. *L. populifoliella*, Tr. I first found this on the 25th of August, 1849, in the larva state. It mines the leaves of *Populus nigra* and *P. pyramidalis* everywhere. My specimens come from the trees in the avenue near Eckerberg. The part of the leaf inhabited by the larva lies between two (parallel) side ribs. The larva does not go beyond these ribs; from this and from the semicircular form of the other two ends, the abode acquires its regular shape. The lower skin of the leaf is pure greenish white and very transparent, only from becoming faded with the advanced season of the year, becoming opaque and spotted. In the middle of it, and parallel with the including side-ribs, are several very fine, pale yellowish folds, which curve the abode only very slightly. From the upper skin of the leaf, the pulp is not eaten away regularly as it is by the oak-miners, but here and there, either in the middle or at the sides.

The larva is anteriorly very broad and flat; the 1st and 3rd segments are of equal breadth, the 2nd is the broadest of all: from the 4th segment the body gradually diminishes. The head is flat, small, quite pale, only brown at the ends of the jaws. Legs very far apart. The first eight segments are pale greenish white, the others, excepting the last, are egg-yellow, but paler than in *L. tremulæ*: the anal segment is almost of the colour of the first segments; the marginal line between all the segments is green. The pupa reposes in a thin, easily-torn cocoon, and is quite black.

This species appears as early as the beginning of September, when one takes it at large on poplars. The period of flight of the spring brood is unknown to me.

With this species I conclude, for the present, the Catalogue of the Pomeranian *Lithocolletides*.

Remarks on some of the Species of the Genus Lithocolletis mentioned in the preceding paper. By H. T. STAINTON, Esq.

THE species of this genus have always been great favourites with me ; and though when of the age of Von Nicelli, I was inclined to be of Haworth's opinion that *Harrisella (quercifoliella)* was a variety of *Cramerella*, yet, variety or species, I admired them equally, and my admiration, repeatedly expressed in the words, " Oh ! what a duck ! " induced a college companion (now, alas ! seduced from the pleasant paths of entomology, by the dry and tedious study of the law), to give them the *soubriquet* of " Stainton's ducks." My better acquaintance with these " ducks " has not diminished my partiality for them ; and every fresh discovery of species or habit is of increasing interest to me. I have therefore derived extreme gratification from the accurate observations and acute discriminative remarks of Von Nicelli, which have again revived one of my day-dreams, *viz.*, a complete monograph of the genus, with descriptions and figures of each state of each known species. Whether I shall ever live to realize this scheme is very doubtful at present ; every time we make the interesting discovery that we *know* one new species, we arrive at the disagreeable conclusion that we *suspect* two others ; and, of course, the desire to have no *suspensions* to record, will tend continually to the indefinite postponement of this day-dream.

REMARKS.

1. From Von Nicelli's observations concerning his mode of collecting the pupæ of *L. Saportella (hortella, F.)* in the *fallen* leaves, we find an easy method of obtaining the pupæ of those species which only inhabit lofty trees, or the higher branches of trees of moderate size.

2. *L. coryli, Nicelli.* Von Nicelli's description of the mode of feeding of the larva is so accurate, that I was able to find the larvæ of this species (previously not known as British) without any difficulty, about the middle of July ; from which period to the middle of August I collected many pupæ, and reared therefrom the perfect insects. The leaves gradually become more folded as the larva grows larger, and the pupa generally has the leaf completely folded over, by which, and by the upper skin of the leaf becoming browner, the size of the larva may be easily known. Unless the larvæ are near their transformation to the pupa state, it is difficult to rear them, as they cannot obtain a sufficient supply of food before the leaf they inhabit withers, and they have no power of moving to another.

3. Von Nicelli states that he obtains *L. pomifoliella* from *Prunus communis*, and all kinds of orchard-trees. Now here I obtain *Pomifoliella* principally from whitethorn: early in October the leaves attacked by the larvæ being as numerous as those exempt from their attacks. I have occasionally found it on the wild apple (*Pyrus Malus*), but I cannot by any means say that it does not frequent our orchard-trees, since I have not yet looked on them for it. This investigation will probably take place this autumn.

4. Of the species which should frequent the mountain-ash, I have no further information. The pupæ of a *Lithocolletis* were discovered by Mr. Douglas, in August, near Mickleham, on the white-beam tree (*Pyrus (Sorbus) Aria*), but the perfect insects so anxiously expected have not yet made their appearance. Pupæ found at the same time on *Viburnum Lantana*, have produced *L. elatella*, Z., *Sta*.

5. *L. pomonella*, Z. The question now arises, What is *pomonella*? On what does it feed? Von Nicelli says that it frequents the beech; but is doubtful whether those that occur on the hornbeam are the same species. Now the species that frequents the hornbeam here, differs so very much from our beech-feeder, that there does indeed arise a question whether the Pomeranian hornbeam species is the same as our hornbeam species, *Carpinicolella*. If not *Carpinicolella*, it may be some other species more allied to *Pomonella*. In the second place, Von Nicelli's beech-feeder is doubtless *Faginella*; so that *Pomonella* is thus eliminated from his list altogether. Is then *Pomonella* a myth? That is, have species after species (*Salicicolella*, *Faginella*, and *Carpinicolella*) been removed from it until there is no residuum? By no means: a residuum is still left, which is *perhaps* again resolvable into two species. Both these residual species frequent the sloe (*Prunus spinosa*), one in May, the other in July and August, which renders it not improbable that they may be merely the two broods of one species, Von Nicelli having observed that the spring and summer specimens of *L. connexella* show considerable differences. For the May species, should it prove distinct, I would propose the name *Deflexella*, from the almost constant deflexion of the basal streak into the first dorsal streak. The July species, which appears to have been sent by Herr Mann to Zeller, under the name of *Spinicolella*,* remaining as the then sole form of *Pomonella*. The following brief descriptions of these *Pomonelliform* species, will perhaps be of some service in calling attention to the essential characteristics.

* 'Linnæa Entomologica,' vol. i. p. 203.

Carpinicolella, *Sta.* Anterior wings shining, pale tawny, with a basal streak, four costal streaks and three dorsal streaks white, and an apical black streak; posterior tarsi *spotted*; *basal streak very slender, with no dark margin at all, first costal streak not dark-margined towards the base, and extended along the costa towards the base of the wing.*

On hornbeam, in May (and August?).

I have observed the larva of a *Lithocolletis* upon the leaves of the hornbeam, which is probably this species; it mines the upper surface of the leaf in white patches, just as *L. coryli* mines the hazel-leaves.

Faginella, *Mann.* Anterior wings shining pale tawny with a slight grayish tinge, with a basal streak, four costal streaks and three dorsal streaks white, and an apical black streak; posterior tarsi pure white, rarely with faint fuscous markings; *basal streak with no decided dark margin, first pair of spots with broad and distinct dark margins on the sides towards the base.*

On beech in May and end of July and August. I have bred it from the pupæ collected in December and January in beech-leaves.

Pomonella (*deflexella*). Anterior wings golden yellow *more or less irrorated with fuscous*, the basal streak is extremely attenuated, runs along the fold for a third of the length of the wing and is *then deflexed into the first inner marginal streak, the dark margin of which towards the base is interrupted by the prolongation of the basal streak*: the first dorsal spot is sometimes prolonged till it meets the first costal spot, at other times its apex is carried on till it joins the second dorsal spot; hinder tarsi white, unspotted. Specimens occur in which the prolongation of the basal streak does not take place, but in those cases there is generally an elbow or projection on the first dorsal streak at that place where the connexion would have taken place had the basal streak been prolonged; in these specimens the first dorsal streak is likewise sometimes prolonged into the second dorsal streak, sometimes into the first costal streak.

On blackthorn (*Prunus spinosa*) in May: not scarce.

Pomonella (*spinicolella*). Anterior wings pale golden yellow, with a basal streak, four costal streaks, and three dorsal streaks white. In many specimens none of these marks have dark margins, or at most they are only faintly indicated on the inner sides of the 2nd and 3rd pair of opposite spots. The basal streak is long, and reaches fully one third of the length of the wing, its apex frequently rather turns up towards the costa: in some few spe-

cimens it has a dark margin towards the costa. The first costal streak has a faintly indicated darker margin on the side towards the base of the wing, and hardly reaches half across the wing; the first dorsal spot has also only faint indications of a dark margin towards the base; the second pair of spots have distinct dark margins towards the base of the wing: the apical black streak is longish-oval, the last costal streak coming nearly to the middle of it, and not unfrequently white scales are continued along it from the costal streak.

On blackthorn, at the end of July and beginning of August; the larva mines the under side of the leaves of the blackthorn, and forms a fold in a longitudinal direction, the upper epidermis having a mottled green and white appearance. They may be obtained in the pupa state in the middle of July, and towards the end of the month the perfect insect appears.

6. *L. ulmifoliella*. The continental specimens of this species are much paler than ours; but as the markings appear identical, it is to be presumed that it is merely a variation of the same species induced by climate.

7. *L. capreella*, *Wocke*. This appears to be the *Salicicolella* of Sircom, which is a species subject to great variations. Its main characters are the unmargined, slender, basal streak, slightly curved upwards at its extremity, and the dark scales on the disk of the wing, between the second pair of opposite spots. The intensity of the ground colour varies exceedingly, and the colour of the spots is not always white, being sometimes pale yellowish, which gives the insect at first sight a totally different appearance.

I have collected the pupæ in October and November, and bred the perfect insect in February and March.

8. *L. quercifoliella* mines the oak-leaves in regular oval patches, and spins up its excrement on the outside of its cocoon, as also does *Cramerella*.

9. *L. connexella*. The difference mentioned by Von Nicelli between the spring and summer broods, has again made me doubt whether our *Viminiella* may not be a form of this species. *Viminiella* I have bred in February, from pupæ collected in October and November on *sallows*; but, according to Von Nicelli, *L. connexella* should occur only on the *smooth-leaved willows*.

10. *L. tenella* frequents the hornbeam (*Carpinus Betulus*) in May (and August?). The mode of feeding of the larvæ is yet unknown to me. There is a suffused variety of it which, seen by itself, might

easily be mistaken for a new species: the ground colour is pale tawny, not unlike the palest specimens of *Alnifoliella*, with a long and rather broad white basal streak, which runs in an oblique direction to the apex of the second dorsal streak; on the costa are four short white streaks, and on the inner margin three white streaks, all dark-margined towards the base; their dark margins being the dark streaks of the typical insect: at the apex is the black *streak*.

The flight of *Tenella* is very feeble, and on the wing it may be instantaneously distinguished from *Cramerella*, which flies in jerks.

11. *L. emberizæpennella*. "I collected several hundred pupæ, but obtained therefrom not a single specimen, since they all dried up." Here we see exhibited on a gigantic scale, one of the great evils with which breeders of *Micro-Lepidoptera* have to contend, the drying up of the pupæ. I believe as good a way as any is to cut out that portion of the leaf which contains the pupa, and to place it in some vessel that is air-tight, or nearly so. Of course the leaf must not be wet when thus shut up, but in its ordinary state it will contain sufficient moisture to keep the inclosed pupa from drying up. When many pupæ are collected, the mass of leaves that would be collected together, if the whole of each leaf were preserved, would be found very inconvenient.

12. *L. tristigella*. By no means the *Tristigella* of Haworth, and therefore to be re-named. I have much pleasure in publishing the name *Nicellii*, proposed for it by Herr Zeller, who says he is himself to blame for Von Nicelli calling it *L. tristigella*, the latter having sent him specimens for examination, which he pronounced identical with some not over-fine specimens of *Tristigella* I had sent him, and therefore returned them to Von Nicelli as *Tristigella*, *Haw., Sta.* Herr Zeller regrets that want of time had prevented him from comparing these specimens with the *description* of *Tristigella*.

As the name has been misapplied, it may be as well, to avoid further confusion, to enumerate the differences between *Nicellii* and *Tristigella*.

Nicellii has the anterior wings *pale saffron*, with *shining* fasciæ and spots. *Tristigella* has the anterior wings *reddish orange*, with pale but *dull* fasciæ and spots. In *Nicellii* there are two fasciæ, a pair of opposite spots forming an angulated fascia, and, besides, *two* small costal spots and a minute one at the anal angle, and *an oval black spot* at the apex of the wing. In *Tristigella* there are two fasciæ, and a pair of opposite spots forming an angulated fascia, and, besides, only *one* single streak extending from the costa a little before the

apex to the angle formed by the opposite spots; there are a few dark scales on its margin, but *no oval black spot*.

Tristrigella frequents elms, in May and August. I once bred it. *Nicellii* is very closely allied to *Frölichiiella*, but is smaller, paler, with much sharper and brighter markings, and the black scales towards the apex more collected into an oval spot.

I have not yet succeeded in detecting the larva, and am not aware that the species occurs with us at all.

13. *L. lautella*. The larva is an oak-feeder, and the pupa is inclosed in an extremely fine elongated cocoon.

14. *L. ulminella*, (*Schreberella*). The ordinary cocoon of the pupa is green or bluish green. In July, however, I found two transparent white cocoons in elm-leaves, from which I bred only *Schreberella*.

In conclusion, I have only to observe that the species here enumerated by Von Nicelli, are identical with those bearing the same names in Zeller's Monograph in the '*Linnæa*,' as I have been assured by Herr Zeller himself.

H. T. STAINTON.

September 1, 1851.

ART. XXVII.—*On the Specific Differences of Vespa vulgaris*, Linn., and *Vespa Germanica*, Panz. By FREDERICK SMITH, Esq., Assistant in the Zoological Department, British Museum.

IN the first volume of the '*Zoologist*' I published a Monograph of the genus *Vespa* (Zool. 161), and stated it to be one of the objects of my communication to point out the true *Vespa vulgaris* of Linnæus; and that species is the same which I re-describe in my present paper. From a careful examination of the materials which I possessed eight years ago, I was led to regard what I have now discovered to be two species, as constituting only one. Since I published my former paper I have lost no opportunity of acquiring additional testimony, and I must confess that every additional tittle of evidence has been against my former conclusions, although, at that time, my premises appeared irrefragable. I have now to show that I was apparently justified in the conclusions I then arrived at; and a short account of the differences of the two species will, I think, not only prove that assumption, but also satisfactorily show that the varieties, as I at that time considered them to be, of *Vespa vulgaris*, constitute two species, namely, *Vespa vulgaris* and *Vespa Germanica*. The following observations

on the two species are the results of examinations of numerous broods of both species, taken at different periods of the year, but principally towards the end of September, when the nests contain the males and females in addition to the workers.

The error into which I was formerly led, is to be attributed *entirely* to the variable character of the *male* of *V. vulgaris*; I now indicate five variations from that which appears to be the type. Var. 5 closely approaches the male of *V. Germanica*, and is not uncommon. I shall show that although the two species appear to intermingle through their close approximation in colouring to each other in the male sex, still that good specific characters are to be found; and that, in one sex, the female, their distinctness is obvious at a glance, this sex, in both species, being subject to very slight variation, and never assuming a similar distribution of colouring.

There are very few distinctive differences in the relative sizes of the two species; in the females I can observe very little. *V. Germanica* is a more robust insect, the largest examples exceeding any of those of *V. vulgaris* which I have met with; the workers are usually rather larger. I have found large workers, or small females as Huber has called them, exceeding, by a line and a half, any of those of *V. vulgaris*.

In the male sex the relative sizes are equal.

In the proportion of parts, little difference is to be found; in the male sex of *V. Germanica*, the antennæ are rather thicker and longer.

As a general distinctive difference I would point out the *pubescence*; this, in *all* the sexes, is more dense and longer in *V. vulgaris*, particularly in the males.

The females may always be separated by the markings on the basal segment of the abdomen; the black band being *always entire* in *V. vulgaris*, but *never* in *V. Germanica*.

The distinctions which exist between the workers of the two species are perhaps the least constant. In upwards of seven hundred individuals from the same nest of *V. vulgaris*, I found only twenty-eight which had *not* the halberd-shaped spot on the clypeus, but in these a straight line running half way down, and a minute spot on each side of its extremity, more or less distinct, replaced it; therefore the halberd-shaped mark may be considered a good general distinctive character; since, in *V. Germanica*, it is quite as rare to meet with it, that species having only a black line half way down. The character upon which I most rely is the form of the yellow crown-shaped spot above the clypeus; the differences are shown in the annexed figures.

The male of *V. vulgaris*, as I observed above, varies greatly in the markings of the abdomen, that of *V. Germanica* seldom, if ever: in several particulars it differs from *V. vulgaris*.

In the workers, the crown-shaped spot on the face, above the clypeus, is of a different shape, and it is more distantly separated from the clypeus.

A few words will show that, although I felt satisfied, eight years ago, that I was justified in the conclusions which I then came to, the difficulties which attach to the discrimination of these species I had not then surmounted; and I have since learned that nothing but an examination of *entire broods* and the detection of permanent characters are safe guides. I had at that time in my possession several pairs of wasps taken *in coitu*, the females of *V. vulgaris* with var. 5 of the male, which I at that time considered *identical* with the male of *V. Germanica*; then again, I possessed true males of *V. Germanica*, taken connected with the true female, but I had not discovered the specific differences which I now lay down. I had also in winter found females of both species in the same nest: this I do not now consider evidence of much moment, as wasps, when seeking winter quarters, may be expected, without any improbability, to avail themselves of the same hybernaculum. The conclusions at which I have now arrived are the results of much observation. I have examined not fewer than from eight to nine thousand wasps, about one third of which I have either extracted from the cells, or they have been developed whilst the brood-combs were in my possession. Still, it will require some attention and careful comparison before the workers and the males of the two species can be readily separated, particularly the latter sex, when var. 5 of *V. vulgaris* closely represents the male of *V. Germanica*. A little practice will however overcome this difficulty. Notwithstanding all the care I have taken—all the pains I have bestowed upon the inquiry—I do not flatter myself that all difficulties are cleared away. I know too well that in many instances local varieties are met with, differing considerably from what may be regarded as the typical representatives of the species; and it is quite possible that a careful anatomical investigation might result in the discovery of more permanent characters whereby to distinguish the species than those which I have laid down; but I have endeavoured to point out such as can, certainly with much advantage, be used by every one. Those resulting from anatomical research would be, in all probability, too recondite to admit of general application. The males, however, can be distinguished

by the differences in the form of the sexual organs, as shown in the figures of those parts of the species.

VESPA VULGARIS.

Vespa vulgaris, *Linn. Faun. Suec.* 1670, and *Cab. Mus. Linn. Soc. Scop. Ins. Carn*, 824. *De Geer, Ins.* ii. 801, t. 27. *Fab. Syst. Ent.* 364, 4; *Id. Ent. Syst.* ii. 256, 10. *Schrank, Ins. Austr.* 787. *Panz. Faun. Germ.* 49, 16. *Rossi, Faun. Etrus.* ii. 83, 861. *Don. Brit. Ins.* vii. t. 266. *Latr. Hist. Nat.* xiii. 351. *St. Farg. Hist. Nat. Ins.* i. 516, 14. *Smith, Zool.* i. 162, f. d. ♀, b. ♂, ♀, ♂.

Vespa Saxonica, *Fab. Ent. Syst.* ii. 256, 12, ♂. *Panz. Faun. Germ.* 49, 21, ♂.

Female.—Length 7—8 lines. Head and thorax black; the clypeus yellow, and having a black stripe down its centre, terminating in a transverse spot, rounded at its inferior margin; a stripe along the posterior margin of the eyes; another occupying the notch of the eyes, and attenuated towards the clypeus; a crown-shaped spot above the clypeus, and the mandibles, yellow; the latter rufo-piceous at their apex. A spot beneath the wings, and a stripe from their base to the margin of the prothorax, an elongate-ovate spot on each side of the scutellum at its basal margin, and a lunate one on each side of the post-scutellum, yellow. The apex of the femora, the tibiæ and tarsi yellow; the latter ferruginous towards their apex; the tibiæ have a black stain behind. Abdomen yellow, its base black; the first segment has a black fascia on its basal margin, pointed in the centre; a similar stripe occupies the basal margins of all the other segments, more or less hidden by their being more retracted or exerted; the second, third, fourth and fifth segments have a black dot on each side.

Var. 1.—The black dots on the second segment united to the transverse band.

Var. 2.—The yellow stripe at the posterior margin of the eyes interrupted or subinterrupted.

Worker.—Length $4\frac{1}{2}$ —6 lines. Head and thorax as in the female, with the addition of a large yellow spot on each side of the metathorax. Abdomen yellow; a triangular black spot in the centre of the basal margin of the first segment, and a smaller one on each side, at its lateral margins; the second segment has a black fascia at its basal margin, produced in the middle into an angulated patch; the rest of the segments are similarly marked, but the fascia is more or less hid-

den, according to the retraction of the segments; all have, on each side of the angulated spot, a small ovate dot. Legs as in the female.

Var. 1.—The small lateral dots on the second segment united to the marginal fascia.

Var. 2.—The second and third pairs united to the marginal fascia.

Var. 3.—All the lateral dots united to the marginal fascia.

Male.—Length $4\frac{3}{4}$ —7 lines. Head and thorax black; head marked with yellow as in the worker, with the addition of a yellow stripe on the scape of the antennæ beneath, occupying the apical half; the clypeus has a round black dot in the centre, a short line, or a line and a spot beneath. Thorax marked with yellow, as in the worker, but wanting the yellow spots on the metathorax. Abdomen, the band at the basal margin of the first segment produced in the centre into an angulated point, the rest of the segments having the black basal band produced into a tridentate shape at their apical margin, all the dots being united to the transverse fascia. (This is the *V. Saxonica* of Fabricius).

Var. 1.—Having the fascia on the second segment only, tridentate.

Var. 2, 3, 4.—Having the first and second, the second and third, or the second, third and fourth tridentate, the spots uniting in great variety.

Var. 5.—A halberd-shaped black spot in the centre at the basal margin of the first segment, and a small lateral spot on each side, the basal bands produced into angular points down the centre, each having a minute black dot on each side. (This variety represents the male of *V. Germanica*).

VESPA GERMANICA.

Vespa Germanica, *Panz. Faun. Germ.* 49, 20, ♀. *St. Farg. Hist. Nat.* i. 516, 13, ♂, ♀.

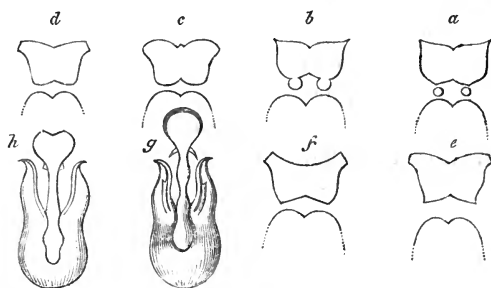
Female.—Length 7—8 lines. Clypeus with a central minute black dot, or having in addition two minute ones beneath it. Abdomen, a halberd-shaped black spot in the centre of the basal segment, and a rounded spot on each side; the black basal bands of the other segments are produced down the centre into angular points, having on each side a round black dot.

Var. 1.—The clypeus with a black stripe running half way down.

Worker.—Length $5\frac{1}{4}$ —7 lines. The worker agrees with the female in its markings; the clypeus has usually a black stripe running down the centre rather more than half way, in *rare* instances it has an indis-

tinged transverse mark on the lower margin. The lateral dots on the abdomen are *very seldom* united to the transverse bands; still, in *rare* instances, they are so, on the second and third segments.

Male.—Length $5\frac{1}{4}$ —7 lines. The description of var. 5 of *V. vulgaris* exactly corresponds with that of the male of *V. Germanica*. The clypeus has sometimes a single dot in the centre, or a line running half way down, or a line and also a dot beneath it, and sometimes a minute dot on each side at its apex.



- a. The coronet-shaped yellow spot above the clypeus in *Vespa vulgaris*, male. The double curved line under each is the outline of the base of the clypeus.
- b. The coronet of the same species, showing the manner in which the two spots, beneath in the above figure, are sometimes united.
- c. The coronet in the worker.
- d. A variety which frequently occurs.
- e. The coronet in *V. Germanica*, male.
- f. The same part in the worker.
- g. The sexual organs of the male of *V. vulgaris*, viewed from above.
- h. The same parts of the male of *V. Germanica*, also viewed from above.

I have found it necessary to redescribe, with some care, all the varieties of *V. vulgaris* which commonly occur, whilst the description of *V. Germanica* only points out those particulars in which it will be found to differ from the former; and, should it be considered that I have been too prolix in so doing, I would call to mind an observation on the difficulties which the student has to contend with in the investigation of these insects; this I extract from one of the best entomological works which has been produced in this country,—the ‘Introduction to the Modern Classification of Insects,’ by J. O. Westwood, Esq., President of the Entomological Society. He says,—“The specific differences of the British species of wasps require a more minute investigation than has hitherto been given to them. This can only be done by studying the *habits* of the different species, in conjunction with individuals of the different sexes from the *nests* of each.”

The largest brood of wasps which I ever obtained, amounted to about 2,000 workers, 360 females, and 230 males. This was taken during the last week of the month of September. I took also a very large nest this year, at the end of September; it contained 356 females, 740 workers, and 150 males: the number of cells was as follows: — 6537 of workers, 1944 of females, and 664 of males. The disparity between the number of cells and that of the insects captured is very great; and if we are to calculate that each *worker-cell* has been the cradle of three generations, amounting to 19,611, it is immense. Réaumur has calculated the entire brood that would probably be developed in a single nest at 30,000; but I am inclined to believe that he trebled the entire number of cells, and I think it only reasonable to suppose that but one brood would be developed from those of the males and females. The entire number of cells in the nest which I took during the present autumn would be about 9,145, which, trebled, would give 27,435, those of the workers trebled would be 19,611. This nest, when taken, did not contain more than about 50 closed female-cells and 30 of males, but more than two thirds of the other cells contained larvæ or eggs in different stages of development; but I had observed, the day before taking the nest, that the workers were busy carrying out the young brood, and dropping them at some distance from the nest; and I think it probable that as soon as the males and females are all come forth, a general clearing out of the cells takes place, and the community breaks up.

In conclusion, I would observe that in no instance in the numerous nests which I have examined have I found the broods of what I have now described as distinct species intermixed. I have with much care examined the developed broods of different nests, and also extracted all the sexes, which I have attentively investigated; and by these means have arrived at my present conclusions.

FREDERICK SMITH.

ART. XXVIII.—*Characters of two apparently undescribed Species of Longicorn Coleoptera.* By EDWARD NEWMAN.

LAMIA (SYMPHYLETES?) DICHOTOMA.

Nigra, lanugine cinerea punctisque lanuginosis albis ornata; prothorax tuberculis binis dichotomis dorsalibus armata; elytra humeris bidentata, dorso dente magno elevato obtuso armata, apice valde oblique truncata, truncaturâ extus acuminatâ. (Corp. long. 1 unc. Elytrorum lat. max. .3 unc.)

Antennæ closely approximate; prothorax with nearly parallel sides, but armed with two large dichotomous tubers on its back, and between these having a mesial longitudinal depression; elytra broad at the base, gradually narrowing to the apex, where each terminates in a very oblique truncature and an obtuse exterior point, at the shoulders they have a bifid tooth, and on the centre of each, near the base, is a prominent, erect, pointed tuber; about the base they are nearly covered with deep and almost confluent punctures, but these are smaller, shallower, and more scattered towards the apex. The colour of the insect is black, with the exception of the costa of the elytra, which is clear brown; on the head, prothorax, abdomen and legs is a gray pilosity, and the elytra are sprinkled with small white downy spots.

HAB.—New Holland. Described from a specimen in the cabinet of the British Museum.

MONOHAMMUS HELENOR.

Fuscus, vittâ faciei utrinquè, alterâ genæ utriusque, alterâ prothoracis utrinquè flavescens, elytrorum maculis numerosis lanuginoso-flavis. (Corp. long. 1 unc. Elytrorum lat. max. .4 unc.)

One antenna is entirely wanting, of the other, 6 joints remain, and these united are about equal in length to the body, the basal joint is moderately long and stout, the second small and very short, and both these are uniformly brown, the third is as long as the first and second together, brown at the apex and fulvous at the base, the fourth is shorter than the third, the fifth than the fourth, and the sixth is scarcely half the length of the fifth, all these have the same distribution of colour as the third. The entire insect is velvety black, adorned with the yellow velvety markings described below; from the centre of the anterior margin of each eye an oblique line descends to the lower extremity of the cheek, and a second, shorter and parallel with this, descends from near the inferior extremity of each eye; a slender silvery line crosses the clypeus just above the labrum; two short lines originate side by side between the bases of the antennæ, and, immediately separating, terminate upon the epicranium; on each side of the pronotum a vitta traverses its entire length, and at its anterior extremity is increased by a concolorous spot on the head, immediately behind the eye; the anterior margin of the prosternum is yellow, and its disk clothed with pale down: the apex of the scutellum is yellow, which colour is prolonged towards the prothorax into an acute point: on each elytron there are about one hundred and twenty roundish yellow spots, infinitely varied in size, the larger ones being arranged in two series on each elytron, the first of these is somewhat sinuous, and composed of six spots, commencing at the prothoracic vitta, and terminating in the apical area, the second is costal, and composed of four spots.

HAB.—The East Indies or East-Indian Islands. In the cabinet of the Zoological Society; presented by the late Sir Stamford Raffles.

EDWARD NEWMAN.

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